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## ORIGINAL ARTICLES.

### THE SURGICAL CARE OF WORKMEN.<sup>1</sup>

BY ROBERT W. JOHNSON, M.D.,

PROFESSOR OF THE PRINCIPLES AND PRACTICE OF SURGERY IN THE  
BALTIMORE MEDICAL COLLEGE.

At first sight there would seem to be no difference between the surgical treatment of a workman and that of any other man, but I hope to show that as a class workmen have peculiarities and surroundings that merit consideration apart from the universal rules that apply in all surgical cases.

Let us at the outset define what we mean by a workingman. He is the laborer, the man who toils with his hand rather than with his head, and uses his muscles rather than his brain. He follows rather than gives directions, and taking the analogy from the Old Testament, is a "hewer of wood and drawer of water." As to his surroundings nothing definite can be said. He may live in a fairly comfortable two-story house, or on a floor in a tenement, or, if a single man, in a shanty near his work. He is paid by the hour or day, and he earns from seventy-five cents to three dollars *per diem*. He forms the vast majority of the body politic, shapes legislation by his aggregate vote, in the main is endowed with some education, his share of common sense, and more than his share of temptation and vice. From the nature of his employment he is liable to injury more than any other class. He is exposed to vicissitudes of weather, the debilitating effects of heat, and cold, and wet, as well as the more salubrious surroundings of outdoor life, or the unhealthy prison atmosphere of dust-laden manufactories.

Except as these conditions influence him as a surgical patient, we must not take time to consider them, and though his face is familiar to every hospital physician, covered perhaps with the grime of the furnace, or with the twilight glow of hectic, so soon to sink into the night, we must limit our view of him to the surgical aspect. He is ever with us, not so much as the victim of surgical disease as of accident. He is no more liable to tumors than his fellow-man at the desk or bar, not so liable to stone as his superior on the bench; but dealing with machinery of immense

power, or endeavoring to overcome the forces of Nature, whether of gravity in the quarry or of cohesion in the mine, or storm at sea, he is torn asunder, and presents all the varieties of shock and laceration, contusion, and often sepsis, that are possible. Not only are these enemies at work, but from poor surroundings, miserable food, bad inheritance, he often brings with him the trail of the serpent left by the sirens of the bawdy-house and bar-room. Perhaps he is a moral family man; here virtue does not bring its own reward. He is depressed with the outlook for his family in case of death, or their want during his forced absence from work. I have seen cases far more anxious on this score than from any danger to which they were personally exposed.

Does the laborer have any inherent advantages to offset this catalogue of detriment? A few, but hardly compensatory. As a rule, the laborer, especially employed out of doors, has a stronger constitution, is less nervous, not so high-strung as the mind-worker. He bears pain with Spartan fortitude, his imagination is not so vivid, and he anticipates less acutely; he is often stoical, rallies easier, is not effeminate, but essentially manly. He has what is commonly called "grit." To him, moreover, the chances are that hospital fare is a treat he does not have at home. His stomach is stronger, and he retains his nourishment better than the members of the pampered class. He feels the transition from activity to bed, but soon gets acclimated. Here let me insist on the immense advantage hospital treatment presents to the laborer over his home care-taking. Besides the greater creature-comforts, such as bed, appliances, regular meals, and systematic treatment, he is relieved of the continuous presence of anxious and solicitous faces, the gossip and the universally bad prognosis of neighbors, who never saw a case like his recover, the continuous trial of new specifics suggested, from a poultice of cowdung to inunctions of holy water. In the hospital he has the systematic care of the trained nurse, cool, used to such conditions, the watchful observation of the house-surgeon, noting real changes, and notifying the surgeon-in-charge, if necessary. In a word, the laborer, though he often refuses the aid, throws away at least 25 per cent. of his chances of recovery by going to the loving but inexperienced care of home rather than the hospital, a place where those concerned make it their business to get their cases well.

<sup>1</sup> Read before the Maryland Medical and Chirurgical Faculty, April 26, 1892.

Let us look incidentally at the practical question, "Who is to support the laborer during the time that he cannot earn his daily bread?" It would be impossible to enter into the politico-economic question now seeking solution on a large scale throughout the world, especially in Germany and in England, as to the pension and insurance of the workingman. That there is no definite answer yet agreed on as the result of national experiment goes to show that the ultimatum is not yet reached. Suffice it to say that the modes generally in vogue are:

1. By means of public charity. The support by State or individual munificence of beds in large hospitals. While this must ever remain, to a certain extent, it presents disadvantages (*a*) in that the laborer gets no help when at home; (*b*) he feels that he is a charity case, and it has a tendency to pauperize him and diminish his self-respect; (*c*) he is under these circumstances, justly or unjustly, the object of perfunctory care, the subject of more or less experiment in the trial of new drugs or appliances or methods, for in this way remuneration for the outlay in taking care of him is justly or unjustly considered; (*d*) unfair advantage is taken by persons able to pay.

2. At the man's personal expense. This, in a vast majority of cases, is impracticable. His family uses up all he has when he is at work. It is not possible to meet the additional charge of from three to five dollars per week when he is out of employment, and, if treated at home, some essential drug or nourishment may be curtailed by reason of the rapid disappearance of the fund laid up for a rainy day, or what soon becomes a rainy season.

3. The employer looks after the men injured, pays their hospital expenses, and allows them part pay during their illness, when that illness is contracted in the line of duty, or the employer feels that his firm is in some way responsible for the attack. This method has some advantages, especially to the capitalist, in that a man who receives kind treatment at the employer's hands is less inclined to litigation than when he is thrown on charity or his own resource, but it partakes of the charity element in that the laborer pays nothing for his own maintenance. Again, his relief is spasmodic; he is not sure that if taken ill, unless injured, he will obtain any help, and we all know how much more frequent illness comes than injury.

4. The last method I will mention is that of a mutual insurance concern among employes. This is in vogue on some of our great railroad systems, and has much to recommend it. Men pay while they are well a certain proportion of their earnings into a common treasury—say a dollar a month, an amount hardly appreciable at the time, a mere *pour-*

*boire*, which is, perhaps, rescued from that untimely fate, and they obtain a certain amount per week when ill or injured; and though they may have been in the association only a few days they can feel that they have complied with its requirements, and, if laid off by accident, are really entitled to the benefits, or rather the rewards of their foresight. In my mind this method has the one objection that it does not associate the employer with it.

My opinion is that the best way to look after the workmen in large companies is by a partnership between labor and capital in taking care of the sick. Let each member of that partnership, the firm and the laborers' benefit association or insurance, pay half the expense of taking care of the ill and injured in employment. This begets good feeling without so much expense on the part of the employer and insures the workman against illness as well as injury, without the idea of pauperism for the workman. I think in this way litigation may be curtailed as much, if not more, than by the method in which the employer pays all; for the workman who brings suit against the insurance association feels that he is not only suing his employer but his fellow-workman as well. My experience with men who have thus subscribed for their own maintenance leads me to believe that it is not irksome—and that, too, in a class the least provident and the least amiable, *i. e.* the common sailor of the merchant marine and oyster boats; but I cannot go further into this interesting question.

Supposing the sinews of care-taking have been provided and we have our patient in hospital, what are the surgeon's duties then? They naturally fall under two heads—his duty to the laborer-patient and his duty to the company that employs him. They are so closely associated that I shall not attempt to differentiate them.

I think somehow the operating-table is a more democratic platform than the post-mortem table. Nowhere is a man "a man for a' that" more than when you are about to cut him, whether he be pauper or millionaire. His robes of office or his overhauls have been stripped off, and he lies before you clothed in humanity, appealing to your sense of human kindness as well as your professional skill. He needs your kindness, your cheer, your sympathy. Treat him as a intelligent being. State facts to him, and let him decide. It may take a little more persuasion or a little clearer advice. It may require a little more patience than with his more cultivated brother of the Stock Exchange, but let him decide, and act on his decision after you have explained the circumstances.

Avoid force, or intimidation, or coercion. The chances are that, since so much of surgery is mechanical and common-sense, you will find your

Hodge more amenable than your clerk. On your own account never operate without his permission, except in emergency or his inability to give it. Do only recognized operations, with well-trying methods, that would acquit you before a jury of any desire to experiment; for this workman, with all his good qualities, is susceptible of a desire to obtain damages from somewhere, when he recovers and has the slightest pretext for asking them. For the same reason, let your prognosis be guarded. Do not be too enthusiastic, and while I consider it a species of highway robbery to steal his or his family's sleep by causing undue anxiety, do not be too roseate about results.

Shock is one of your greatest adversaries. The force attendant on injuries to workmen makes this a prominent feature of their lesions. I have found that hypodermatic injections of morphine and atropine, strychnine, and heat, hot coffee internally, or hot milk punch, very effective in tiding over this rock. Wounds and compound fractures I have disturbed as little as possible. Rest is to be secured by splints, and asepsis by the application, over blood-clot formation, of iodoform and mild bichloride gauze, a stock of which, together with other emergency necessities, cots, etc., I have distributed in various available locations about the works.

One cannot be too conservative about amputations. It is marvellous how much injury a hand or foot may receive, and yet come out under aseptic treatment a useful member. I have found that patients, without exception, prefer to preserve a heel or a small portion of the foot to amputation higher up the leg, and my experience justifies them in their selection, as they are able to stump around and have artificial feet made that are as comfortable and convenient as a false leg would be. It may take longer to heal than the higher amputation, and require more nursing; but I am not one of those who would care to fly so in the face of the patient's prejudice unless I saw commensurate advantages undisputed.

There is, I know, some difference of opinion in regard to the advisability of the mediotarsal or Chopart's amputation.

Jacobson<sup>1</sup> says: "The value of the operation has been a good deal disputed."

Treves<sup>2</sup> says: "The value of the operation is open to serious question."

Stephen Smith,<sup>3</sup> quoting Hudson, says: "The tarso-metatarsal and mediotarsal amputation will not hereafter be performed when there exists intelligent and humane regard for improved surgery and the greatest benefit of the sufferer."

On the other hand, it has the valuable commendation of such men as Agnew,<sup>4</sup> who says: "I do not think the danger of the cicatrix drawing down is an insuperable evil."

Bryant<sup>5</sup> says: "Chopart's amputation is an excellent and valuable operation, and should be always be performed in preference to any higher measure."

Erichsen<sup>6</sup> says: "The result of this operation is extremely favorable, the patient, by the aid of a properly constructed boot, being able to walk, and even to dance."

Moullin<sup>7</sup> says: "The stump left by the operation is, in many cases, exceedingly good."

"Mr. Hancock has collected 152 cases of Chopart's amputation, of which 120 resulted in recovery, with serviceable stumps, 2 in reamputation, 11 in death, while in 15 the result as regards utility of limb was uncertain, and in 4, though life was preserved, the stumps were not satisfactory."<sup>8</sup>

Coming to conservative operations on the hand, there are two that demand a passing word in this connection and about which there is more or less controversy among surgeons.

The first is the question of amputation at the joint between the first and second phalanges of the little, ring, and middle fingers. The opposition to this amputation arises from the fact that there will be no flexor attachment to the remaining phalanx, which will stand out as an obstacle when the other fingers are flexed.

Thompson,<sup>9</sup> in a valuable contribution on the "Surgery of the Hand," says:

"In amputation, to remove as limited a portion of the finger as possible is, in the main, proper, but exceptions should be made to this rule in amputating the middle and ring fingers, especially among the laboring class. Experience satisfies me that among that class it leaves the most useful hand to remove the middle and ring fingers at the metacarpophalangeal articulation, as a stump from amputation in the continuity or at the phalangeal joint, the flexor and extensor muscles having been severed, renders the hand comparatively useless, and is, therefore, much in the way of the laborer in performing his work. I am more convinced that it gives a better result to amputate those fingers at the knuckle-joint."

In the discussion provoked by this paper Dr. L. McLane Tiffany stated that:

"It is true that if amputation is made through the first phalangeal joint a useless stump is left; but there is no earthly necessity, as far as I can see, why the tendons which naturally pass over the joints should not be made to have an attachment after

<sup>1</sup> Surgery, vol. ii, p. 357.

<sup>2</sup> Practical Surgery, p. 1019.

<sup>3</sup> Surgery, vol. i, p. 105.

<sup>4</sup> Treatise on Surgery, p. 1149.

<sup>5</sup> Ashhurst's Surg., p. 126.

<sup>6</sup> Transact. Amer. Surg. Assoc., vol. ii, p. 188, *et seq.*

<sup>1</sup> Surgical Operations, p. 958.

<sup>2</sup> Manual of Operative Surgery, p. 433, vol. i.

<sup>3</sup> Operative Surgery, p. 856.



amputation at the joint. In other words, when the flaps are made, the stitches which unite the skin can also be passed through the tendons and their sheaths. I have done this for a number of years, and I have never failed, as far as I can remember, to secure quite as good movements of the second and third fingers as if Nature had originally made an attachment there for these tendons.<sup>1</sup>

Dr. Maclean stated that he has hardly ever seen a patient who had such movement of a stump of this form. Agnew, Erichsen, and Jacobson disparage the operation. Moullin advises it under certain conditions.

My own practice in this regard is to consult the man's wishes, at the same time telling him that it is possible to correct the failure of the stitched tendons, flexing the phalanx by a subsequent operation, with little or no risk. As a rule, the decision is in favor of the phalanx, and, so far, I have had no complaints.

The last specific operation to which I shall refer is one to which the question of utility vs. esthetics is more marked—namely amputation at the metacarpo-phalangeal, or knuckle-joint. Shall the head of the metacarpal bone be allowed to remain, or shall it be excised in order to conduce to the symmetry of the hand. Authorities again differ.

"In a laboring man it is wise not to remove the head of the metacarpal bone."<sup>2</sup>

"When, however, the patient's employment is one in which great strength and breadth of hand are required, and when appearance is of little consequence, the head of the bone may advantageously remain."<sup>3</sup>

"The hand may be rendered more symmetrical by the removal of the head of the metacarpal bone, but the gain of symmetry is more than counterbalanced by the loss of firmness and strength."<sup>4</sup>

"In all these disarticulations the head of the metacarpal bone should be spared whenever possible."<sup>5</sup>

"When strength has to be considered rather than appearance, the head of the metacarpal bone should be left."<sup>6</sup>

In these cases in laboring men I invariably save the head of the metacarpal bone if possible.

Asepsis is so difficult to maintain or to secure in hands and feet and scalp begrimed with furnace smut and driven in by contusion and laceration, that we have in the blood-clot treatment of Schede a great advance in accident-surgery when organization can take place in the deeper parts before pus-organisms have gotten a foothold and resistance

is made and the field occupied by Nature's methods in advance, suppuration being discounted as it were.

To reduce the armamentarium of the operator, when called to see workmen at their homes and when there are not the same facilities for aseptic work as in the hospital, I have devised a kettle containing trays, which, fitted with the respective instruments and dressings, may be boiled while the patient is preparing. I boil everything, using silk ligatures and sutures in proper lengths wound on glass. I have substituted for the rubber tissues (which balked me in this respect) the thin scales of transparent mica to protect the clot, and which stand any amount of boiling or acids or bichloride. They, as well as the other essentials, a wash-boiler, with meat-dishes or plates to hold the trays, may be obtained in any house where there is a stove. The dressings after boiling should be impregnated with a mild bichloride solution, for, while the boiling renders them aseptic, it does not make them antiseptic. I feel competent in an emergency now to venture, with these simple appliances, *i. e.*, a pocket-case, a few tablets of bichloride, into a laborer's house and find those articles used in his domestic life which will give me material assistance in antiseptic work, and render suppuration more and more inexcusable, even in back country districts or with druggists out of sight. I need not dwell on the great value of pressure in eliminating dead spaces by elastic cushions of gauze, supplemented by lino, which when dry forms a splint.

In the interest of the company have the testimony of eye-witnesses taken at the time of the accident, so that you can present that to a jury if necessary, and not be dependent on garbled, forgetful, or partial memories should the case come in court. Inform the man's family gently of his condition from time to time, see him every day and impress him with your sincerity and attention. Avoid the publication of accidents in the daily newspapers as far as you can, as there is a "shyster" in law as there is a "quack" in medicine, who is on the lookout for damage suits for a contingent fee, and though I have known the name in print to act as a temporary balm to the friends of the injured man, and perhaps to the sufferer himself, I think it best for the interest of all concerned that matters move on without the interference of the public. So, do not court the reporter in the hope of seeing yourself advertised. You may often be asked by the patient whether or not, if you were in his place, you would sue for damages. Decline to be anything but the surgeon in charge of the case; do not oppose him, or he will think you in league with the company. Simply tell him that you are his physician and not his lawyer, and he must decide. Should your patient obstinately refuse to follow your surgical

<sup>1</sup> Loc. cit., p. 226.

<sup>2</sup> Bryant's Surgery, p. 1013.

<sup>3</sup> Erichsen's Surgery, vol. i, p. 90.

<sup>4</sup> Ashhurst's Surgery, p. 118.

<sup>5</sup> Treves's Man. of Oper. Surg., vol. i, p. 332.

<sup>6</sup> Jacobson's Surgical Operations, p. 23.



advice, it is well, as protection to yourself and your employer, to obtain a *written* acknowledgment of your proposition and his declination, or, if he declines to give you that, get the corroborative testimony in writing of several fellow-patients in regard to your offer and his obstinate refusal. There is no comfort in his verbally declaring that he will take the responsibility of his act; see that you are protected in black and white.

All these precautions and cares, however, will sometimes be of no avail, unless the company you represent second your endeavors, not with parsimonious, penny-wise policy but in the same spirit and liberally. This they can do if they contribute to the care of the injured by meeting your suggestions cheerfully, going to the necessary expense in necessities, and, more than that, wisely allow the injured man some privileges and actual money, say half-pay, while sick, in addition to his hospital cost, or if the company and men contribute equally, doing it cheerfully and punctually. Then, in the after-treatment, they can do a great deal toward smoothing matters over—an easy position for awhile to an injured man, where he can earn his living without too much hard work, gradually getting him back as he improves into his old or a better position. Men appreciate the opportunity to earn a living, in my experience, far more than they do a money benefit. A little attention on the part of the heads of the firm, a casual inquiry of a man how he is doing, all these little thousand and one ways of showing that the employer does not look on his laborer as a machine, to be cast into the gutter when broken or even useless, bring about the *entente cordiale* so requisite in the harmonious working of large bodies of laboring men.

Should, in spite of the methods mentioned, a man who has been hurt insist on damages, except as far as your prognosis is asked, you have nothing to do. With the law you are not an expert; to your employer you can only say what is your unbiased opinion as to the extent of damage done. You have nothing to do with the placing of responsibility on either party, and your testimony should be as impartial as if you had been called as an expert in a hypothetical case. You have no right to take sides in your testimony; though, as an employé of the company, you can suggest questions to the attorney for the possible confutation of the plaintiff's medical testimony. In the last connection, *i. e.*, lawsuits, I am glad to say, I have but little experience.

During the last five years I have been connected as surgeon with some of the largest manufacturing and labor-employing concerns in this State. In one alone, the medical department has treated over five thousand cases of accident and illness, ranging

from fracture of the vertebræ, with long-suffering life in the hospital, to contusions of the little finger. In that list may be found death, loss of sight, disfigurement, loss of limbs, double fractures, in fact, everything nearly that can constitute an injury or ailment, and, yet on this system described, with careful and kindly work in the same line by my assistants (many cases of small injury I never see), together with the hearty coöperation and liberal seconding I always cheerfully get from the heads of the firm, we have treated, as I said, five thousand and more cases, and there is yet the first suit for damages to be tried against this firm. I do not claim it as my work, nor do I say that it is altogether that of others. We have done it conjointly, and I feel a certain amount of pride in pointing out the modicum I had in bringing it about.

#### THE INFLUENCE OF THE NERVOUS SYSTEM ON CERTAIN DISTURBANCES OF THE SKIN.<sup>1</sup>

BY A. RAVOGLI, M.D.,  
OF CINCINNATI, O.

In the skin, more than in any other organ of the human body, the alterations of the nervous system presiding over the nutrition of the tissues are readily apparent, because externally located and accessible to the eye. The nutrition of the skin, like that of other organs, is entirely subordinate to certain nervous filaments, which regulate the tonus of the blood-vessels, and are therefore called vasomotor nerves. The disorders of the nutritive processes of the skin clearly manifest the derangement of the nervous elements connected with the affected region of the skin, which really constitutes the effective cause.

The arteries and the veins are subject to variations in caliber not only in a passive way, from their elasticity, but also actively from the presence of muscular fibers in their coats. The muscles belonging to the organic system are exclusively under the control of the vasomotor nerves, which are principally supplied by the sympathetic nerve from the whole extent of the spine and from some portions of the base of the brain. It is well known that when one of these nerves is cut through, the temperature of the related part of the body rises, the arteries become engorged, and the pressure of the blood is augmented. On the contrary, the application of a galvanic current to the same nerve produces diminution of the caliber of the arteries and the temperature falls. This shows that the influence of the nerves on the bloodvessels is persistent, and through them the muscles of the vessels are continually kept in active tension. In the arteries the contractility is

<sup>1</sup> Read in the Section of Dermatology and Syphilography of the American Medical Association, at Detroit, June, 1892.

much better developed than in the veins, but in the small veins and in the capillaries, by lack of muscular fibers the changes in their caliber are only passive. The organic contractility of the arteries is not in relation with their pulsation, and in consequence their contractile power is the regulator of the pressure of the blood. These nerves control the nutrition of the different organs by increasing or diminishing the supply of blood, according to the energy and the activity of the organ.

The action of the vasomotor nerves on the muscular fibers of the bloodvessels explains many affections of the skin attended with inflammatory symptoms and changes in its nutritive functions. These affections have nothing to do with the real inflammations of the skin, and in most cases they are the result of some constitutional disorder, often of the presence of a poisonous substance acting upon the center of the vasomotor nerves. Exanthemata and many erythematous eruptions belong to this group and form a class named by Auspitz angio-neurotic eruptions.

It is not this kind of skin-affection that forms the basis of this paper, but I wish to speak of some disturbances in the nutritive functions of the skin manifested by intrinsic alterations of its histologic elements. There is no doubt that the nerves regulating the circulation, and presiding therefore over the nutrition of the skin, have a close relation with the sensory nerves, as tropho-neurotic disturbances are often consequences of irritation of the sensory nervous fibers, or are accompanied by alterations of sensibility.

In most cases we find that the lesions of the skin are accompanied by symptoms emanating from the nervous centers.

Miss V. B., a brunette, twenty-two years old, for about six months had noticed a peculiar eruption on her body. She appeared to be in good health. Menstruation was regular. When four years old she began to suffer with chorea, which lasted for several years. At the age of twelve she had epileptic attacks, which were repeated from two to three times a week. These subsided, but she remained subjected to attacks of dizziness and cephalalgia. She presented an eruption consisting of macular spots from the size of a dollar to that of the palm of the hand, of white, ivory color in the middle, surrounded by edges uniformly pinkish-red. The white of the spot presented the characters of a scar. The skin could not easily be raised between the fingers, being rather hard. The pinkish-red edges were not elevated above the level of the skin, and displayed no inflammatory manifestations. One spot, as large as the palm of the hand and somewhat oblong, was located on the right hip-joint. Another spot was on the abdomen, extending down to the genitals. Another spot, somewhat roundish, was on the left thigh. There was no pain or itching, but

the spots presented a kind of numbness which caused some discomfort. The sense of touch on the spots was diminished.

The case was one of liodermia neuritica, Glanzhaut, glossy skin, recently described as striæ or maculæ atrophicæ. Descriptions of this affection have been given by Cantani,<sup>1</sup> Feré et Quermonne,<sup>2</sup> Touton,<sup>3</sup> Buchwald,<sup>4</sup> Bradshaw,<sup>5</sup> Troisier,<sup>6</sup> Bouchard,<sup>7</sup> Wilks,<sup>8</sup> Sheperd,<sup>9</sup> and Ohmann-Dumesnil.<sup>10</sup> Almost all authors are agreed that the origin of the striæ or maculæ atrophicæ must be found in some tropho-neurotic disturbance. Sheperd and Ohmann-Dumesnil have each reported a case of liodermia consecutive to typhoid fever, and the latter ascribes the disturbance of the skin to the depressant action of the severe disease.

In my case disorders of the nervous system had been present; the patient at first suffered with chorea, then with epilepsy. Furthermore, the alteration of sensibility was very pronounced. I was not allowed to make a microscopic examination of the abnormal skin. There is no doubt, however, that the affection was the result of a disturbance of the nutrition of the connective tissue of the corium causing the peculiar atrophy by a defect in the action of the trophic nerves.

A not less interesting condition of the skin is the atrophy of the pigment, leukoderma, which I have likewise found associated with affections of the nervous system.

Not long ago, Mrs. A. T., thirty-nine years old, in rather poor health, sought relief on account of some white spots upon the face and trunk. She was of dark complexion, had dark hair, was very delicate and nervous, and her mucous membranes showed her anemic condition. Her appetite was usually not very good, and her bowels rather constipated. Menstruation was scanty and painful. She had at several times been under treatment for melancholia. She often had hysterical attacks, in the course of which she noticed a white spot on the left side of her chin, consisting of three or four coalescent maculæ, each as large as a quarter of a dollar, and extending from the left angle of the mouth toward the neck. The naturally dark complexion of the patient contrasted strongly with the white color of the spots. Other irregular spots could be seen on the neck and chest, on the arms and hands. The spots were accompanied by no symptoms whatever, no itching, no pain, no desquamation, but in the affected regions

<sup>1</sup> Il Morgagni, 1881.

<sup>2</sup> Progrès Médical, 1881.

<sup>3</sup> Deutsche med. Wochenschrift, 1886.

<sup>4</sup> Vierteljahresschrift für Dermatol. u. Syphil., 1883.

<sup>5</sup> Brit. Med. Journ., 1888.

<sup>6</sup> Bulletin de la Société Médicale des Hôpitaux, 1888.

<sup>7</sup> Bulletin de la Société de Chirurgie de Paris, 1886.

<sup>8</sup> Guy's Hospital Reports, 1861.

<sup>9</sup> Journal of Cutaneous and Genito-urinary Diseases, 1891.

<sup>10</sup> Monatshefte für prakt. Dermatologie, 1891.

there was a great diminution of sensibility; there was likewise analgesia on her fingers.

According to Jacob Halpern,<sup>1</sup> in the regions of the human skin abundantly furnished with pigment the granules are mostly contained in the deepest layers of the rete Malpighii, and there are ramified ameboid cells which are connected with the blood-vessels and the nerves. The pigment in the white race consists of small granules of dark-yellowish color surrounding the ramified cells; no pigment-granules are found free in the layers of the epidermis without accompanying those cells which supply the pigment. This observation affords us the explanation that when the nutrition of these ramified cells is withdrawn their protoplasm is reabsorbed and they can no longer supply pigment-granules, and the pigment is reabsorbed by the cells of the rete. Pigment is nothing more than the result of a chromatopoeitic function of these ameboid cells, which take up the blood-corpuscles or their contents, changing them into pigment, which is distributed in the layers of the rete and the deepest layer of the epidermis. In the appearance of the white spots of leukoderma we can see some relation with the distribution of the bloodvessels and the nerves in the affected region.

The neuropathic origin of leukoderma is supported by the analogy with lepra. In some cases of lepra we have leukoderma in the form of white spots, on the neck and on the extremities, and in the middle of the white spots sensibility is remarkably diminished. As lepra stands in such conspicuousness in relation with disease of the nervous system, it cannot be doubted that the affected nerves are responsible for the disappearing of the pigment in the affected regions by the disturbed action on the blood-vessels.

Another form of disturbance of the skin that I have encountered in association with nervous disorders is scleroderma.

E. S., a German girl, eight years old, in infancy suffered with pneumonia, cholera infantum, and eczema, from which she recovered. About four years ago she began to be nervous and restless. She could not sleep, and cried without cause. At times she suffered with neuralgic pains in the legs and arms, and at times a severe itching sensation caused her to scratch and abrade the skin with her finger-nails. The parents remarked that her legs were getting thinner, and that the skin of the knees and calves was so hard and inelastic that the girl could walk only with great difficulty. Similar changes were observed in the arms and hands, until the girl could not move her limbs, which were perfectly stiff. The itching was so intense that the child could not get an hour's sound sleep. When I saw her she was

rather well developed. Her face only presented some freckles in the region of the nose and cheeks. The hair was rather abundant, and of light-chestnut hue. Nothing abnormal was to be seen on her neck. The arms were thin, and the skin was so hard that the arms and hands could not be moved. The skin had a dirty-yellowish color, resembling parchment, from the deltoid region to the fingers. The elbow was stiff, and could not be bent. It was not possible to raise a fold of the skin, and it seemed that bones, muscles, and skin, formed one mass, like a piece of wood. The epidermis showed deep furrows, and especially on the hands around the wrists there were fissures from the breaking of the skin by attempts to bend the hands. No movement at all was possible in the fingers, which remained stiff and semiflexed. The pigment was unequally distributed on the affected surface, so that the color varied, resembling marble. There was a large area of sclerotic skin on her abdomen, extending from the left hypochondrium in a band to the genitals, which were also involved. The legs were in a similar condition. The right was the worse, and had lost its shape. It was stiff from the hip-joint to the toes. The left leg was affected to the knee, the thigh being almost free. The feet, like the hands, were hard and stiff, with some fissures around the calf from attempts to walk; locomotion was difficult and painful. The sensibility of the affected skin was greatly diminished. Itching was, however, marked, and the skin was excoriated from scratching. The skin was dry, and the perspiration was absent from the body, and only present on the head and face. The body temperature, taken in the affected axilla, was only 97.7°.

In this case there is no doubt that not only was the skin deeply affected, but the muscles had also undergone a certain degree of atrophy, as the limbs were deformed and movement interfered with. Changes in the muscular fibers in cases of scleroderma have already been recorded by Thibierge,<sup>1</sup> who expressed the opinion that the affection of the skin is secondary to the affection of the muscles. In our case, however, the relation seems to have been the reverse. The atrophy of the muscles seems to have been secondary to the affection of the skin.

I am sorry not to have been able to make microscopic investigation of the affected skin, as this was refused by the mother of the girl. The disease seems to have had its seat in the connective-tissue elements of the corium and of the subcutaneous tissue. The panniculus adiposus was completely gone, from atrophy of the fat-cells, and the elastic fibers were greatly increased. The bloodvessels and the lymph-spaces were compressed by the accumulation of connective-tissue elements, which produced also the atrophy of the glands of the skin.

Here we have three affections of the skin that display an intimate connection with diseases of the

<sup>1</sup> Ueber das Verhalten des Pigmentes in der Oberhaut des Menschen. Monatshefte für prakt. Derm., 1892.

<sup>1</sup> Rev. de Médecine, No. 4, 1890.



nervous system. The first case, one of macula atrophica, was in a woman who was affected with chorea, and later with epilepsy; the second case, one of atrophy of the pigment, was in a woman, affected with hysteria and melancholia; the third case was in an extremely nervous girl, affected with neuralgic pains. There is nothing new in this proposition, but I only want to strengthen what has been already observed. Duhning<sup>1</sup> refers to atrophy of the skin in consequence of alteration of the nutrition in progressive muscular atrophy. Weir Mitchell<sup>2</sup> has reported cases of injuries of the nerves, with atrophy of the skin, and of the subcutaneous tissue. Robinson<sup>3</sup> is of the opinion that glossy skin may result from wounds. McCall Anderson<sup>4</sup> refers to a case of atrophy of the skin which followed an injury of the supraorbital nerve, and gives as the cause of the atrophy of the half of the face that took place the irritation of the sympathetic of the neck. Brunner<sup>5</sup> found atrophy of the skin of the left side of the face in a female epileptic.

Considering the condition of the nervous system in our patients, it appears that the cause of the disturbances of the skin have to be found in the nervous system. The action of the nerves is to regulate the functions of the bloodvessels. The alternations seem to have been especially in the sympathetic system, which presides over the vegetative functions, but we cannot absolutely assert that the nervous centers are not implicated in the production of these affections. Fibers from the brain and spine pass through the ganglia that constitute the origin of the sympathetic and make it an independent system. The fibers emanating from the ganglia are not only motor, but also sensory. This is made manifest when irritation is applied to a region under the control of the sympathetic nerves; movements are produced in the organs supplied from that group of nerves. The ganglia are not organs of movement, but are organs through which reflex action is accomplished without the consciousness of the brain. The stimulus applied to the sensory fibers causes a reflex movement through the ganglion, the sensation remaining in it without causing any feeling; but when the stimulus becomes an irritation, its effect does not remain limited to the ganglia, but is carried to the spine and to the brain, giving rise to pain.

Many disturbances of the nutrition of the skin exist without producing any sensation, remaining strictly limited in the zone under the control of the sympathetic. This we see when the disturbance does

not deeply affect the texture of the skin, as in our cases of leukoderma and lioderma; but when the results of the affection are more profound, as in scleroderma, then some sensation is aroused, as in our case, which was attended with neuralgic pains and itching. There is no doubt that some of these affections, by their topographic distribution in the skin, follow the ramifications of the nerves lying underneath, or rather follow the lines of division of the cutaneous nerves, as indicated by Voigt. In nevus linearis, ichthyosis cornea, ichthyosis hystrix, we find the disposition of the disease in the course of the underlying nerves. In one case of ichthyosis hystrix, in a boy eight years old, that came under my observation, the disease so closely followed the course of the sciatic and crural nerves that it looked as if some one had drawn the lines with the pencil. In many cases of anomalies of the pigment, as in nevi pigmentosi, either congenital or acquired a short time after birth, the lines follow the ramification of the nerves of the affected region with wonderful closeness. Kaposi refers to two cases of nevi verrucosi, in which the verrucæ were seated accurately in the course of the sciatic nerve.

Neumann<sup>1</sup> refers to a case of nervous nevi, in which the pigment-hypertrophy and warts were distributed from the gluteal region to the toes of the foot, in perfect correspondence with the nervous ramifications of the leg. The disposition of these maculæ, or hypertrophies of the epidermis, corresponds with that of the underlying superficial nerves, but does not exactly follow the deep-seated nerves. According to Philipson,<sup>2</sup> the skin-disturbances follow rather the cutaneous nerves, maintaining the lines of Voigt. The difference of direction between some lines of altered skin and the direction of the nerves would be explained by the physical growth of the body, the affection occupying the original course of the nerves.

The nerves that control the nutrition of the skin are not distinct from others, but are in connection with motor and sensory filaments. In consequence of this fact Baerensprung considered alterations of the skin of this kind as the result of a disturbance of the spinal nerves. The same nervous origin applies to nevi vasculares, in which the spots represent areas corresponding to the distribution of the nerves of the region. Nevus vascularis of the face indicates that originally, in the embryo, the trigeminus was affected, with dilatation of the capillary bloodvessels as a result.

In our first case we have two areas of the skin affected with atrophy in an oblong form. There was at first a small spot of a reddish-violet color, which gradually became white and atrophic in the center,

<sup>1</sup> Treatise on Diseases of the Skin, 1881.

<sup>2</sup> Injuries of the Nerves and Their Consequences, 1872.

<sup>3</sup> A Manual of Dermatology, 1884.

<sup>4</sup> Treatise on Diseases of the Skin, 1887.

<sup>5</sup> Physiologie und Pathologie des Sympathetischen Nerven-Systems, 1879.

<sup>1</sup> Oesterr. Jahrbuch für Pädiatrik, 1877.

<sup>2</sup> Monatshefte für prakt. Dermat., 1806.

showing the intense color in the periphery. The intense redness was the result of stasis due to the diminished tonus of the bloodvessels, the vasomotor nerves having lost their control.

In the second case, we have atrophy of the pigment following the course of the inferior maxillary nerve of one side and on the left arm.

In the third case, there were profound alterations of the skin involving the corium and the subcutaneous tissue, due to the condition of the nutrition of the limbs and body.

All three affections appeared and slowly progressed in persons affected with nervous symptoms, as anesthesia, analgesia, hyperesthesia, etc.

I believe that liodermia, leukodermia, and sclerodermia, although different affections, are closely related. They display an affinity for persons with an altered condition of the general nervous system.

They are the result of an affection of the nerves, either central or peripheral. In a word, they are the result of an alteration in the nutrition of the skin, through an altered condition of the trophic nerves.

In conclusion, I would say that the difference between leukodermia, liodermia, and sclerodermia, is only one of degree, produced by lack of nutrition, affecting in the first the ameboid cells of the Malpighian layer, which furnish the granules of the pigment; in the second, affecting the connective tissue of the superficial layer of the corium; and finally, in the third, involving the connective tissue of the corium and of the subcutaneous tissue.

#### INTUBATION VERSUS TRACHEOTOMY.

*Being a Study of 858 Cases Operated On at the Boston City Hospital.*

By ROBERT W. LOVETT, M.D.,

OF BOSTON;

OUT-PATIENT SURGEON TO THE BOSTON CITY HOSPITAL; ASSISTANT SURGEON TO OUT-PATIENTS AT THE CHILDREN'S HOSPITAL, AND SURGEON TO THE INFANTS' HOSPITAL.

THE operation of intubation for the relief of croup is one that has excited the deepest interest in the last few years, and its merit is a question of the greatest practical value. It comes into competition, of course, with the older operation of tracheotomy, and the question of the comparative merits of the two is one that has been the subject of many articles. At the end of six years of trial, during which time the operation has been performed upon thousands of cases, intubation stands in a position to be judged on its merits, and to be compared with the operation of tracheotomy as a life-saving measure.

There are two methods of presenting this comparison to the reader: (1) By the relation of personal experience and by weight of authority<sup>1</sup>; (2) by

the statistical method, which is open to the objection pertaining to all statistical inquiries in medicine, but which, upon the whole, seems to me to be a more scientific and satisfactory mode of procedure.

The objection to any method that collects reported cases of the two operations from literature and endeavors to draw conclusions in this way as to the comparative merit of the two lies in the fact that the statistics of either operation greatly vary according to locality and the individual reporter, so that in this way they lose much of their value from their lack of uniformity.

When groups of cases of tracheotomy, for instance, are collected from literature, the variation in the recovery percentage is a most striking one. For example: in 9242 cases collected from French authors the recovery percentage was 24, while in a group of 400 cases reported by Wauscher, of Copenhagen, the recovery percentage was 42. It is manifest that if any practical conclusions are to be drawn from the comparison of tracheotomy and intubation statistics, the two classes of cases should have been, to a certain extent, under like conditions. It is for this reason that I venture to call attention to two groups of cases, taken from the records of the Boston City Hospital, which seem to have more than a passing interest in determining the relative value of these two operations. I have nothing new to present in a statistical way, and merely desire to call attention to certain obvious deductions that seem warranted from the two groups of cases already reported from the Hospital. These deductions are, however, necessarily colored by my personal views and experience.

With regard to the opportunities afforded at this Hospital for such observation, it may, perhaps, be permissible to quote the remarks of Dr. O'Dwyer, in a letter to Dr. G. W. Gay:<sup>1</sup> "From the large number of cases of croup treated at the Boston City Hospital it certainly affords the best opportunity for the study of this disease to be found anywhere in this country. When you shall have accumulated the same number of intubations as you have had tracheotomies it will settle the question of the comparative methods of the two operations in saving life better than thousands of cases collected from various sources."

Up to the year 1887 the operation of tracheotomy was the only one performed at the Hospital. The cases from 1864 to January, 1887, were collected and analyzed.<sup>2</sup> Of these cases there were 327. Excepting in 30 cases, all of the operations were done between 1880 and 1887. The first intu-

<sup>1</sup> G. W. Gay: Boston Medical and Surgical Journal, October 11, 1888.

<sup>2</sup> Lovett and Munro: The American Journal of the Medical Sciences, July, 1887.

<sup>1</sup> Faulkner: THE MEDICAL NEWS, April 9, 1892.

bation was done at the City Hospital, December 31, 1886, and from that time to January, 1891, the operation was performed 392 times.<sup>1</sup> It seems perfectly fair to contrast these two groups of cases as bearing upon the merits of the two operations, because they were performed under like conditions, upon the same class of cases, and, for the most part, by the same surgeons. The operation of intubation was taken up with interest, and was most carefully watched.

It should be borne in mind that the cases included in these two groups are, for the most part, severe cases. The Hospital is particularly well equipped for the care of these cases of diphtheria, and, in general, cases are sent to the Hospital in preference to being operated upon at home. At the same time it is easy to see that the cases are sent to the Hospital generally as a last resort, after the expectant treatment has been pursued in most cases too long, and the children who are admitted to the surgical department of the Hospital are only too often in a hopeless condition. As mentioned by Dr. Gay, it has always been the policy of the Hospital to perform the operation, even in manifestly hopeless cases, in the hope of affording relief. It cannot, therefore, be expected that the mortality percentage will be a low one when such a class of cases is taken for analysis; nor, as a rule, would the results be nearly as favorable as in private practice, where cases are likely to be seen earlier, and where mild cases would be seen. The proportion of cases developing laryngeal symptoms in the Hospital is a small one, and most of the cases are admitted in a state of urgent dyspnea.

For the most part, the conditions from 1880 to the present time have been constant. If there has been any change, it has been since February, 1888, when a new diphtheria-ward was opened, which is particularly well equipped and well ventilated, so that it would seem probable that any change in the conditions would tell in favor of the later operation of intubation. Since July, 1890, two house-officers have been detailed for exclusive duty in the contagious service, serving two months, and living in the ward. If there is any fault to be found with the results of either operation at this Hospital, it is not to be ascribed to unfavorable conditions or inefficient nursing. The conditions are as favorable as possible.

After this prelude, it may be permissible to examine in detail what the results of the two operations have been, as exemplified by the figures taken from the books of the Hospital. Up to 1887, tracheotomy had been performed in 327 cases for croup. Of these cases, 232 died, and 95 recovered, making a

recovery percentage of 29.05; ten cases died during or soon after operation, but only four of these from hemorrhage. It was manifest from a study of these cases that the tracheotomy death-rate at the Hospital continued for months in closest correspondence with the mortality percentage of diphtheria in the whole city of Boston. In short, when diphtheria was most fatal in the city tracheotomy was most fatal at the Hospital. It is presumable that the same conditions could be applied to intubation, although it has not been possible to analyze the cases in this regard. It must, however, be evident to anyone who sees many of these operations that it is the severity of the disease that kills in most cases rather than any influence related to the operation itself.

In the 327 cases of tracheotomy there were four in which it was difficult to remove the tube. Several months elapsed before it could be permanently taken out. All of these cases completely recovered.

In short, tracheotomy was performed 327 times, with 29.05 per cent. of recoveries; ten cases died immediately, presumably as the result of the operation, and in four cases there was difficulty in removing the tube.

The first intubation at the Hospital was performed on December 31, 1886, and from that time until January 1, 1891, this operation had been done 392 times. During this time 139 tracheotomies were performed. It is manifestly unfair to consider these tracheotomies as having any bearing upon the question at all, because, in those four years the operation of intubation was adopted as a routine procedure, so that tracheotomy was reserved for the most part for the severest and most desperate of the cases, in which it seemed hopeless to do intubation, so that these 139 operations, in which the recovery percentage was only 11½, cannot be taken into account in any way. It is not by this meant that the cases of intubation were selected, but that, naturally, tracheotomy, as the old and more tried operation, was adopted as a last resort in the severest cases. When it is noted that nineteen of these tracheotomy cases were moribund at the time of operation it can, perhaps, be better understood how desperate the majority of them were.

Of the 392 cases of intubation, 312 died, and eighty recovered, making a recovery percentage of 20.41. The accidents occurring in connection with tracheotomy have been mentioned, so that it seems perfectly fair to speak of the more numerous accidents in connection with the operation of intubation. Twenty-one times intubation was attempted, and immediate tracheotomy was necessitated by the cessation of breathing. Of these cases only two recovered. In three cases death occurred during the attempt to insert the tube. Two children died during the choking-spells. In two cases the tube

<sup>1</sup> Prescott and Goldthwaite: Boston Medical and Surgical Journal, December 31, 1891.



was drawn into a bronchus, and death of course resulted. In two the insertion of the tube was followed by convulsions. In two the introducer broke during the operation. This list of accidents, all necessitating tracheotomy, it seems to me, is a serious commentary upon the operation of intubation.

It is no easy matter to do an instantaneous tracheotomy when an intubation tube has been introduced and has failed to give relief, or when the attempt at intubation has caused sudden choking. The child is generally lying in bed, the cessation of breathing is instantaneous and very threatening, and the conditions are not favorable for the careful and successful performance of tracheotomy. The fact that only two of twenty-one cases of this sort recovered is not encouraging for the performance of such operations. The operations were performed with care, and under otherwise favorable conditions, inasmuch as they were undertaken in a well-equipped hospital, so that the liability to accident should have been certainly no larger than in private practice.

In two respects, then, intubation does not compare favorably with tracheotomy in the study of these two series of cases: 1. The death-rate of intubation is 9 per cent. higher; 2. Accidents during intubation are much more common.

It is of especial interest to consider the merits of the two operations with regard to children under three years of age. The outlook could hardly be worse than it is in tracheotomy. Of forty-two patients under two years of age, on whom tracheotomy was done, only three recovered, while, of 123 cases in which intubation was performed on children under three years of age, 14.63 per cent. recovered. Although these two groups of cases cannot be very well compared on account of the differences in age, yet if an operation is so nearly hopeless as is tracheotomy, it seems wiser to perform the milder operation of intubation. Again, tracheotomy in these very young children is likely to be a difficult operation, and, although intubation is by no means easy in these small mouths, it seems to me to be a more acceptable operation than tracheotomy in children under two years of age. In children between two and three the question would be debatable. With regard, however, to the choice between the two operations in general, the question is often evaded by the performance of intubation, to be followed by tracheotomy. Should the case progress badly, it is against this secondary tracheotomy that I would particularly protest. I would plead for the early performance of tracheotomy if it is to be done at all.

The showing for this secondary tracheotomy is exceedingly bad when the figures are considered. In the City Hospital figures there were 57 secondary

tracheotomies, with 5 recoveries. Ganghofner<sup>1</sup> has reported 21 late tracheotomies in 42 cases of intubation, all of which were fatal. Urban<sup>2</sup> lost all of 18 secondary tracheotomies done after 32 intubations. Jakubowski did 27 secondary tracheotomies in 64 intubations, and 25 died. Mudd<sup>3</sup> saved 3 out of 4 secondary tracheotomies.

These are all the reported groups of secondary tracheotomies that I have been able to find, but as a collection they afford very little encouragement for secondary tracheotomy, whatever the cause may be of this great fatality:

<i>Secondary Tracheotomy.</i>		
	No. of cases.	Recoveries.
City Hospital	57	5
Ganghofner	21	0
Urban	18	0
Jakubowski	27	2
Mudd	4	3
Total	127	10

The recovery percentage was 7.8, and without Mudd's very exceptional group only 5.8 per cent. recovered.

To commit oneself to a method of procedure of which the recovery percentage in cases of average severity ranges from 6 to 8 seems unjustifiable. In view of these figures the conclusion that I would present is that intubation is not so favorable an operation as tracheotomy for the saving of life in severe laryngeal diphtheria. The chief reason for this appears to me to be twofold: intubation does not afford such good drainage to the trachea, and only a limited amount of nourishment can be taken by the intubated patient.

First, as to drainage. A child on whom tracheotomy has been performed expels through the tube large quantities of detritus, consisting of mucus, pus, and diphtheritic membrane. The metallic expulsive sound with which this is ejected is familiar in every tracheotomy-room. The stuff comes out, often a teaspoonful at a time, for two or three days, and the larger the amount of discharge the more favorable the outlook for recovery.<sup>4</sup>

In intubation cases this does not occur. Whatever becomes of this mass of material, it is certainly not expelled from the mouth. It may be swallowed or it may be inhaled, but it is not often expectorated. To my mind this is a great disadvantage, in comparison with which the occasional accidents associated with intubation are of little account. The material is highly septic, and its retention in the body cannot be otherwise than harmful. This is a

<sup>1</sup> Jahresbericht f. Kinderheilkunde, 1889, xxx, 3.

<sup>2</sup> Deutsche Zeitschrift f. Chirurg., 1890, xxxi.

<sup>3</sup> Medical Mirror, January, 1890.

<sup>4</sup> The American Journal of the Medical Sciences, July, 1887.

matter that has been largely overlooked, but which is certainly of consequence in severe diphtheria.

The limited amount of food that most cases of intubation are able to take is also to my mind a decided objection to the operation in severe diphtheria. In the tracheotomy series the children took from twenty to forty ounces of milk a day. Thirty ounces constituted a fair amount, and when a child took less than twenty-five ounces it was noted as an unfavorable symptom. In the intubation cases the diet was restricted to soft solids, which are inferior to milk in their sustaining power, and a much less quantity was generally taken than was the case in the tracheotomy series. A diet of soft-boiled eggs, milk-toast, ice-cream, and oatmeal, is not a stimulating one, nor is it one very well suited to maintain the strength throughout an intensely septic and prostrating disease. Rectal injections can of course be used to supplement feeding by the mouth, but only a limited amount of food can be taken in that way, and often none at all is retained. It has been said that it is the severity of the disease that kills in most cases, whatever the operation, and the free stimulation possible in tracheotomy cases is often a powerful aid in withstanding the great prostration and sepsis. To give up the hourly stimulation of concentrated food and alcohol, pushed to its utmost, is to my mind to give up a very important means of doing good in these desperate cases.

Most of the objections so often urged against intubation seem trivial in the extreme. The fact that the lumen of the tube is smaller than the normal trachea, that tubes are occasionally coughed out or swallowed, the fact that food is occasionally drawn into the trachea, are matters of small moment. Intubation tubes become stopped with membrane often, but so do tracheotomy tubes. These are comparatively trifling matters.

When, however, an operation shows a recovery percentage of nine less than the operation that it is intended to supersede, in presumably the same class of cases, it becomes time to criticise it, and, if possible, to find the source of the greater fatality.

In conclusion, I would again call attention to the lamentably small recovery percentage in cases in which tracheotomy has been performed after a preceding intubation. Again, accidents, and especially hurried tracheotomy, occur often during attempted intubation. In most cases these eventuate fatally.

Finally, I would suggest that the cause of this increased fatality after intubation in severe diphtheria lies in the imperfect drainage and the limited amount of nourishment that it is possible to give.

The performance of any operation as a routine practice is of course unfortunate, and individual cases should be treated according to their especial features, but in general I would be glad to advocate

the performance of tracheotomy instead of intubation in most cases of severe laryngeal diphtheria, except in the cases of children under two years, when intubation is to be preferred.

## ORIGINAL ADDRESS.

### THE RELATIONSHIP OF DISEASES OF THE LOWER ANIMALS TO MAN.<sup>1</sup>

BY JAMES LAW, F.R.C.V.S.,  
PROFESSOR OF VETERINARY MEDICINE, CORNELL UNIVERSITY,  
ITHACA, N. Y.

I ACCEPT the invitation to address you on this occasion as a tribute to the growing sense of the value of comparative medicine in the sanitary field. I shall therefore ask your attention shortly to a few points showing the relationship of diseases of the lower animals to the well-being of man.

A sense of the dangers attendant on the use of animal food appears to have been almost as old as history. The law of Moses distinguishes between the clean and the unclean, the beasts that may be eaten and those that may not. The prohibited animals are, in the main, the purely carnivorous and omnivorous—those that are especially liable to contract contagious and parasitic diseases from the flesh of their victims. In drawing a safe limit, the edible mammals were practically restricted to the ruminants, which are *par excellence* herbivorous. According to this law, however, even the *clean* animals were forbidden, if they died of disease, of strangulation, or with the blood in the carcass. Similarly, among many primitive peoples a dead body is tabooed, and in ancient Greece the priests of Zeus were polluted by touching uncooked meat.

The great sanitary importance of the Mosaic laws for a pastoral people pitching their tents on the open, grassy plains, and living, in a sense, in common with their vast flocks and herds, is manifest without argument. The parasites and contagia that they mutually harbor increase and dominate in exact ratio with the close aggregation of their hosts—human and brute—and the facility of their transmission from one to another. The prohibition falls first on those flesh-feeders that are the most likely to reciprocate with man in the maintenance of parasites and infections. Then it denounces the sick as especially dangerous, and, finally, that which dies full of blood and is correspondingly liable to early putrefaction. The prohibition of blood was probably ritualistic rather than sanitary in its object, yet we need not ignore the experiments of Signol, who showed that the portal blood of a suffocated horse contained a poison that could be conveyed from horse to horse with fatal results through several successive generations.

The simple avoidance of the dead body and of uncooked meat in the case of many early peoples, though showing a similar precautionary tendency, is far less effective than the prohibitions of the Jewish code. We can still observe the good fruits of the latter in the comparative immunity of the Israelite from such diseases as trichinosis, the pork tapeworm, and tuberculosis.

These examples of tribal hygienic laws, however well-

<sup>1</sup> Delivered before the Alumni of the University of Buffalo.

sued to an age in which the knowledge of disease and its causation was but as a glimmering spark, are sadly antiquated and ineffective in the strong electric glare of the nineteenth century; yet even now our hygiene of meats, as applied to our stockyards and markets, is far behind that which the Jews have practised for over three thousand years.

The Jewish system is a crude measure, feeling, as it were, in the dark for protection from an imminent danger, and was perhaps as perfect as could be understood by a people with the grade of knowledge possessed by the Jews; but it is capable of making no real discrimination between the dangerous and the harmless—whole genera of wholesome animals are prohibited to avoid the danger of a few of each genus conveying deadly poisons; and the wholesome flesh of the imperfect or injured animal is condemned equally with that which is the subject of a fatal infection. Moreover, some of the most deadly diseases (like anthrax), affecting the blood and spleen only, may still pass as wholesome, because no solid tissue of the body has been observed to be diseased.

With our modern knowledge of the life-history of parasites and of the microbes of disease this crude and unintelligent selection and rejection must give place to a true scientific scrutiny; and every available resort, microscopic and otherwise, must be brought into requisition to protect the public from the truly dangerous animal foods.

To illustrate the field that must be covered I shall name a few of the diseases of our meat-producing animals that are communicable to man, and I cannot begin the list better than with

**TUBERCULOSIS.**—From this terrible scourge the sheep is almost exempt, while cattle, goats, pigs, rabbits, and chickens are extraordinarily susceptible. Among many wild animals also, the proclivity is strong, and thus at every hand man is liable to meet the redoubtable bacillus. The dangers of the disease are the greater that in many cases occurring in man and beast it assumes a chronic course, and its victims manifest a fair measure of health, so that their unsuspecting owners apprehend nothing and see no need of disposing of them, and of thus cutting short their career of plague-diffusion. The vitality of the tubercle-bacillus is also very great, so that it survives alike the lapse of time, the wetting, drying, freezing, and thawing of changing seasons, and even the curing of the meat and the heat of ordinary cooking. Toussaint and others have again and again infected animals with meat that was believed to have been sufficiently cooked for safety. The dried-up expectoration is easily diffused with deadly effect on the air, to be inhaled by man and beast; and though for man perhaps the most common vehicle is the handkerchief, and for the beast the feeding or drinking trough, yet the dust of our streets and stock yards, of our dwellings, stables, passenger and stock cars is a prolific channel of infection.

Milk is another common medium of infection, and, since the time of Gerlach, has been often used successfully to produce tuberculosis in previously healthy animals. Nor is the local disease in the udder essential to its conveyance through the milk. The tuberculous cow, with a still apparently healthy udder, frequently yields milk which, inoculated in other animals, produces tuber-

culosis. Irrespective of the escape of the microbe with the milk, however, it is a thousand to one that the tuberculous cow in licking her udder should leave upon it more or less of her infecting expectoration, to be dropped into the milk-pail as dust at the next milking. A frequent mode of propagation among pigs must not be overlooked. About abattoirs it is a common practice to feed to pigs the uncooked offal of the slaughtered animals. As in certain districts a considerable proportion of the cattle are tuberculous, this amounts to a systematic infection of the hogs. A few years ago, at a large public institution, where one-half the herd of cattle proved to be tuberculous, and where the pigs were fed on the offal of these cattle killed for beef, I found that the swine were, as a rule, similarly affected. I am informed that it is no uncommon thing here in New York for a cow, run down by tuberculosis, to be butchered in some out-of-the-way place, cut up into mince-meat, and put on the market as sausage.

Then, again, the danger of contamination through offal and expectoration, though great for pigs, is even greater for chickens, which secure admission to every yard, and eat indiscriminately any organic refuse they can find—notably thick expectoration. Then, too, the course of tuberculosis is far more virulent in the chicken than in our larger mammals, and the product is proportionately infective to other animals. Is it wonderful that in the State of New York for a period of eight years ending 1888, every eighth death was from tuberculosis? We need not ignore or undervalue the accessory and predisposing causes of this dread disease. Many persons have undoubtedly a great power of resistance to tuberculosis, and the great majority escape death by this all but ubiquitous germ; yet the facts remain that none contracts the affection in the absence of the bacillus; practically no efficient measures are taken to restrict its prevalence, and 12 per cent. of our human mortality is caused by its ravages. Now, one word as to the diagnosis of tuberculosis in animals. Speak of consumption, and the average hearer conjures up a vision of extreme emaciation, a frequent, racking cough, profuse expectoration, with solid particles floating in a purulent medium, a heavy and somewhat offensive breath, inappetence, sunken eyes, and general wretchedness. In cattle, however, the majority of cases show no such symptoms, at least for a length of time—often for years—after the onset of the disease. The symptoms will vary extremely, and prove in the main absolutely unlike in different cases, according to the organ attacked. I cannot take time here to enumerate the symptoms of the different forms, so I shall content myself with naming the organs most frequently attacked, to the exclusion of the lungs:

1. The bowels and mesenteric or sub-lumbar glands.
2. The throat and pharyngeal lymphatic glands.
3. The liver, spleen, pancreas, or kidney.
4. The generative organs (ovary, womb, testicle).
5. The subcutaneous and intermuscular lymphatic glands.
6. The cancellated tissue of the bones.
7. The skin.

As the involvement of each of these may assume all grades of severity, it must be evident that great skill is required to diagnose many a chronic or subacute



case of tuberculosis in the animal. In many occult cases, indeed, diagnosis is practically impossible by ordinary tests, and in the case of dairy herds in particular the reaction with tuberculin may be invoked to attest whether the milk-supply is wholesome or otherwise. Inoculations may further be resorted to in doubtful cases. These tests, however, together with the post-mortem examination in the abattoir, with the occasional resort to staining and microscopy, can only be conducted by the educated man.

To properly restrict such a disease as this, and to prevent its propagation to the human family from the brute, a professional supervision of dairy herds is demanded; also, of stock yards, but above all of slaughter-houses, and to make this last effectual every town should have its *one* municipal abattoir, where alone animals may be killed and where every animal killed must be inspected. Meat that has not been inspected by the authorities should be debarred from the market.

**ANTHRAX.**—To turn to another animal contagion—*anthrax* may be selected. Though most deadly to both man and beast, this, when once started, is not propagated indefinitely in a locality. Its germ—the bacillus anthracis—is one of the largest of the pathogenic microbes, and was the first to be identified as a cause of disease. The disease is rarely propagated except by contagion from diseased animals—either directly, or through the medium of flesh, blood, morbid discharges, hair, wool, hides, bones, litter, knives, or other solid bodies that have been stained with the diseased products. Its perennial home is in certain dense, wet, or septic soils, in which its spores are preserved indefinitely, and which prove deadly to flocks or herds placed upon them. In open, well-aired soils it is soon rendered harmless. In man it is largely the disease of herdsmen, cattle-dealers, butchers, tanners, hair-workers, felters, and wool-sorters, and, exceptionally, through the contaminated flesh, milk, or cheese of consumers. Though this wholesale poisoning of men is exceptional, yet on infected soils it sometimes reaches a high figure. In 1770 15,000 people died in six weeks in St. Domingo from eating anthrax flesh, and in the frequent anthrax years on the steppes of Russia a large percentage of the human population often perish in a single year. Besides this, the virus is carried and inoculated by mosquitoes and other blood-sucking insects, and thus man is usually attacked on the face, hands, and arms—the parts which are habitually bare. The dangers to man are, therefore, coextensive with the prevalence of anthrax in animals. Anthrax may, however, appear as a general fever, with no local external lesion, or it may become localized in tongue, throat, bowels, skin, muscles, lungs, or elsewhere, and according to its seat will be its symptoms and morbid changes. At the autopsy the engorged spleen may indicate disease, but it requires professional skill to say whether that engorgement is due to the bacillus anthracis, the shorter bacillus of blackquarter, a bacillus of septicemia, or the plasmodium of Texas fever. From Texas fever, however, man is exempt, and he can eat the flesh of its victims without thereby sealing his fate.

**BLACKQUARTER**, or bloody murrain of cattle and sheep, has been alleged to be incommunicable to man, as anthrax has been said to respect swine, but there is a sufficient number of instances to the contrary to show that the immunity is by no means invariable.

**DIPHTHERIA.**—It may be a revelation to some that that dread of our nurseries—diphtheria—is also a disease of the lower animals, and that, among other parts, it attacks the udder and milk-ducts of cows, and thus through the medium of the milk it can find an easy entrance to the throats of children. Whether, therefore, in the dairy cow or in the slaughtered ox, the educated eye should be ready to detect and remove the animal charged with such a terrible infection.

**GLANDERS** is usually supposed to be confined to the horse and man, and in both alike it is rightly considered one of the most painful, loathsome, and fatal diseases. It can be successfully inoculated not only in man and the horse, but also in the sheep, the goat, the pig, the rabbit, the dog, and the cat. The meat-inspector must, therefore, be acquainted with the affection as it occurs in each of these genera, and as it attacks the different regions of the body; for glanders may attack almost any portion of the system, to the exclusion, at first, of its common seats, the nose and skin. In this disease, too, as in tuberculosis, the germ (*bacillus mallei*) elaborates specific chemical poisons (ptomaines and toxines) which, when inoculated in the suspected animals, go far toward determining the presence or absence of the disease, by producing or failing to produce a febrile reaction in the subject. Again, as in tuberculosis, the germ of glanders can be cultivated on a large number of organic substances, as bread, potatoes, peptonized gelatin, etc., outside of the animal body, and hence its tolerance in any locality is a source of constant danger, and, in the present state of knowledge, nothing less than criminal.

**CANINE MADNESS.**—As we erroneously attach the idea of glanders among domestic animals to the horse only, so we connect the idea of rabies (hydrophobia of man) with the dog. Not man alone, however, but all domestic animals contract this disease when inoculated with the mad dog's tooth, and in all alike the carcass becomes infecting. I must add that the disease does not always present itself in the violent or delirious form, but that in a certain number the apathetic or paralytic symptoms predominate from the first, and in the absence of an intelligent inspection the meat of such an animal may be thrown upon the market and may fatally infect those that partake of it. That this disease can be prevented by inoculation with the toxines has been shown by the admirable work of Pasteur; yet the enthusiastic application of his method to the as yet sound animal is not without its drawbacks and dangers, unless the animal so inoculated is carefully secluded from others for a length of time. It is a notorious fact that where such inoculations have been most extensively adopted rabies has been unusually prevalent in animals, a circumstance that calls for intelligent supervision of our meat-products in this direction.

**TETANUS**, or **LOCKJAW**, is nearly related to rabies. Its germ (*bacillus tetani*) is conveyed from infected soil to man or beast, and from animal to animal indefinitely. Like rabies, it makes its localization in the great nerve-centers, as the general racking muscular spasms bear all too frequent evidence. Like rabies, too, it attacks all warm-blooded animals, and thus man may suffer by infection from any creature so diseased, or from contaminated dwellings, instruments, or soil. While it is true that this malady can be cured by the blood-serum of an

animal that has survived an attack, and while it is further true that the system may be fortified against it by inoculation with the ptomaines and toxins produced during the disease, such truths can never justify the lack of such skilful professional inspection of our meats and meat-producing animals as shall protect the community from an affection at once so agonizing and so redoubtable.

**MILK-SICKNESS.**—In a number of localities that have fallen behind in the race of agricultural improvement there lingers a disease, indigenous to the soil, communicable to all mammals and affecting the nervous centers so as to nearly abolish the functions of the brain and spinal cord. It produces, among other things, profound torpor of the digestive functions, general nervous tremors, loss of control of the voluntary muscles, and great depression of the intellectual functions, amounting in man to loss of the moral sense. If survival takes place at all, it is at the expense of rational and moral qualities, as a result of which continued existence is rendered altogether undesirable. A dangerous feature of this disease is that, if it attacks a milch-cow, most of the poisonous products are secreted in the milk, and the cow shows only slight signs of illness. The contaminated milk, butter, and cheese, however, prove most pernicious to those who consume them; hence the disease is known as *milk-sickness*. Physicians practising in *milk-sick* districts say that such cases are not altogether absent from our large cities, being caused by the meat, butter, and cheese shipped from such contaminated districts, and that certain obscure cases of intestinal torpor, brain-prostration, and mental hebetude are to be thus explained. It is true that milk-sickness is an affection confined within very narrow limits, yet, like other deadly contagia, it could be largely obviated by a strict municipal professional control of all meats offered for sale.

**FOOT-AND-MOUTH DISEASE** is fortunately not a present denizen of this continent, but, when it does secure a footing on our shores, it threatens all mammals, and through the contaminated milk is liable to carry off our children by an acute digestive disorder.

**ACTINOMYCOSIS, the LUMP-JAW** of cattle, is common in man and other animals, attacking not the jaws alone, but the tongue, face, throat, abdominal organs, the walls of the chest and belly, and even the brain. As the disease is due to a slowly growing cryptogam, it has been common practice in Europe to cut off the diseased portion and put the remainder of the carcass on the market as *sound beef* forsooth. Some great feeders and packers connected with the Whiskey Trust are contesting in the courts of Illinois their right to do the same. A sound sanitary system, recognizing that this vegetable parasite can only proceed from the seeds of a similar preëxisting growth, that the seeds from any such growth may develop when planted on any susceptible raw surface or follicular recess of the body, and that its presence in isolated form in such a secluded organ as the brain proves the conveyance of the seeds by the animal fluids, must recognize that the removal of the visible deposits is no sufficient guarantee, and that the condemnation of the entire affected carcass is demanded. It is quite true that the thorough cooking of the meat would render it wholesome, but the same remark would apply to trichinous flesh or to any meat in which the

dangerous factor is a living organism. That man suffers extensively from the disease is witnessed by reports in the medical journals of from two hundred to three hundred cases in the course of a few years past. The danger is, therefore, far enough from being a merely imaginary one.

I need not try your patience by following this list further. I might speak of *malignant edema*, and other forms of *septicemia*, of *erysipelas*, of *pyemia*, of *gangrene*, of *echinococcus*, of the *beef and pork tapeworms*, of *trichinosis*, of the *infective osteitis* of young animals, and of still other infections and parasites that we reciprocate with our brute possessions. I might speak of the leukomaines and toxins of overexertion and excitement, and of the ptomaines and other poisons of decomposing and putrid meats, of the inoculation of live stock with animal venoms, of the impregnation of the flesh with vegetable narcotics, which though harmless to certain herbivora, are deadly to man, and of the presence of certain inorganic agents, which, like phosphorus, are most injurious to the human organism. I might go on to show that in all conditions of high fever and in various other forms of disease the flesh becomes unwholesome and innutritious. Finally, I might go over the whole list of zymotic diseases that respect the human family, but are contagious from animal to animal, decimating herds, depressing agriculture, and reducing the quantity and raising the price of meat.

I have said enough, however, to show that the comparative pathology of the end of the nineteenth century is such as to justify and demand a scientific inspection of our live stock offered for food or furnishing dairy-products, and no less so of carcasses presented for human consumption. By scientific inspection I mean, not the untaught glance of the man who has graduated from the stock yards, the shambles, or the army commissariat, but the skilful scrutiny of the professional man, trained in comparative pathology, up to date in the sciences of bacteriology and parasitism, and having at his command modern methods of work and instruments of precision. I cannot too much deplore the low estimate put by the public on such work. The political representatives of this State at Albany voiced the general ignorance in enacting a law giving the title of veterinary surgeon to all who would testify that they had prescribed medicinally for sick animals for a period of three years, and now every county in this State has its crowd of registered veterinarians, utterly innocent of all knowledge that goes to make up the armamentarium of the comparative pathologist, but nevertheless duly licensed to poison, maim, and slay the valuable flocks and herds of the Empire State. A few days ago a gentleman whose horse had his hoof wrenched off in crossing a railroad track was told by the superintendent of the road that he should have applied to him and he would have sent him to the best veterinarian in New York. The practitioner so designated by the superintendent turned out to be one of those registered veterinary surgeons who had graduated from the stable, and by act of the Legislature had been endowed with all the rights and immunities that pertain to the comparative pathologist. The gentleman, however, knew better and saved his horse.

If the action of the Legislature and of the railroad magnates is to be taken as a proper gauge of public

opinion, it is not surprising that New York has done next to nothing, as a State, for the education of the veterinary physician and sanitarian. Such education has been left to private enterprise, and as a matter of course it must be restricted by financial considerations, and the length and thoroughness of the course of study must remain a consideration secondary to the resultant income. It is useless to deny that veterinary education has suffered seriously from this cause, so that the possession of a diploma of one of the schools is not necessarily a guarantee that the owner is a desirably educated man. He has received some training, however, in the fundamental principles of comparative disease and medicine, and if his preliminary education is such as to permit it, and if he is sufficiently industrious, he can carry on his education and make himself an accomplished man.

In Europe, with a system of veterinary schools equipped and controlled by government, they do better. The matriculant must be a B.S. or B.L., or he must hold a first-class professional certificate from a gymnasium, and must thereafter pursue a course of study for four entire years before he can present himself for the final examination for a degree. The records show that even then not more than one-third secure the coveted diploma, and the remainder have to take a fifth or even a sixth year before that desired goal is reached.

If America could have similar government colleges we would be enabled to secure veterinary sanitary officials of the high quality required. In the absence of government schools, something should be done by some of our wealthy universities; but even with them we see as yet hardly the first faint ray of recognition of this great need of the country. Each institution earnestly competes with the others in establishing rival schools of classics, of the general sciences, of philosophy, and many in developing colleges of economics, of law, of agriculture, of architecture, of engineering, of mechanics, of medicine even; but this one subject, which lies at the foundation of all sanitary control of our meats and dairy products, of the preservation and soundness of \$2,000,000,000 worth of live stock destined for human consumption, the pathology of our great animal industry, which is essential to the permanent fertility of our soil, is persistently ignored. The University of Pennsylvania and Harvard University have now made a beginning, and we may hope to see a better recognition of this subject in the future.

Of our 43,400,000 cattle, it is estimated that 3 per cent. are tuberculous, while the ratio in dairy cows rises much higher. If, however, we count only 2 per cent. on our 95,200,000 cattle and swine, we have in round numbers 2,000,000 domestic animals daily exposing man and beast to this terrible contagion, and we have a large proportion of these yearly sold from the butchers' stalls as human food. Though we ignore all the other animal diseases communicable to man and confine our attention to this alone, we may well ask, in the light of our sanitary knowledge of to-day, is it less than criminal to neglect this source of danger, so manifest and so preventable, or to delay educating men for this sanitary service?

The education of efficient men is, however, not enough. Arrangements must be made whereby these men will be

enabled to perform their work with system and thoroughness. Our perfunctory plan of inspecting the carcass in the butcher's stall is utterly insufficient. Some contagions that render the meat deadly may at given stages of the disease show to the unaided eye little or nothing abnormal on inspection of the dressed carcass. Splenic apoplexy is a notorious example of this. It follows that the subject must be made to pass the scrutiny of the skilled eye before death and during slaughtering, and that instruments and methods of precision must be called into requisition whenever they may be needed. Such inspection, however, often becomes practically impossible in the private slaughter-house, where the proprietor can control the opening and closing of the doors, the hours of slaughter, the disposal of the products, etc. To secure a satisfactory inspection the abattoir must be a public municipal institution, under strict regulations, and in which all butchers may hire at low rates the facilities necessary for slaughtering and utilizing the products. Apart altogether from the sanitary inspection of meats, this has been generally found to be the most economical, cleanly, inoffensive, and in every way most desirable method; when, therefore, it is also the only method that can insure that the inspection shall be satisfactory it may be held imperative on every city to adopt it. The advantages of one central abattoir appear to have been first realized by a guild of Roman butchers in the days of the ancient empire, but the true municipal abattoir, owned and controlled by the city, we owe to the first Napoleon, who projected those of Paris in the later years of his reign, showing a wise example, which has since been followed by nearly all of the great cities of Europe. The concentration of the work of slaughtering has been attempted in Boston, Philadelphia, and New Orleans, and to a lesser extent in New York, but in nearly every case the ownership has been vested in a private corporation, so that the greatest benefits to the butcher and the public have failed of realization. To give an example of the economy of municipal ownership, the Edinburgh abattoir rents a slaughtering booth, pen, and yard, with all facilities for the utilization of the products, for \$40 a year. To the butcher, therefore, it is a real economy, and this object must never be lost sight of in sanitary administration. The community has a right to protect its health by the control of slaughter-houses and the rigid scrutiny of all sources of its meat-supplies; but if in so doing it imposes any undue or unnecessary burden on the honorable butcher, it will only serve to arouse opposition and defeat its own ends. Hence the granting of a charter to any company to erect and maintain an exclusive abattoir is, in my opinion, a most unwise procedure. A public building, owned by the city, controlled by the health board, and conducted on principles specially favorable to the butcher, is the ideal provision, and such an establishment faithfully administered must soon establish its claim to permanence.

As regards the dressed-meat trade, it is manifest that as yet the same strict inspection cannot be applied. It is to be hoped, however, that ere long our cities will be supplied with carcasses stamped with a certificate of soundness, as is now furnished with the meat shipped to Europe, and that the authorities may be able to obtain the assurance of the thoroughness and reliability of such



inspections, whether conducted by government or municipal agents.

Like all reforms, this sanitary inspection of meats and meat-sources will be opposed on the ground that what was good enough for our fathers can be safely borne with. Such an argument, however, proves too much. Could Buffalo maintain her prosperity if the lakes were cleared of all steamers and the traffic once more remanded to sailing craft? Could her business be conducted in the absence of telegraphs, telephones, gas, and electric lighting systems? Could she safely abolish her sewage system or her steam fire-engines? Would it be less than criminal to go back even to untrapped or unventilated sewers? Could the modern surgeon be tolerated if he ignored alike anesthetics and aseptic operations?

Every age has its own status of knowledge, and such knowledge entails a corresponding measure of responsibility. What was an advanced position for our great grandparents would be a reprehensibly antiquated and effete measure in our own day, clogging the wheels of progress and dooming a community or nation to decadence. It is true to-day as in the days of Isaiah, "The nation and people that will not serve the Lord shall perish, yea, that people shall be utterly wasted" (Isa. lxii, 12). With our fuller knowledge of the laws of God's universe, we have a greater trust imposed upon us, and unless we recognize these laws and harmonize ourselves with them in every sphere of human activity we shall fail of our stewardship and lag behind in the general progress. There is a profound truth in the Socratic aphorism "Vice is ignorance; virtue is knowledge." We can modernize it by saying, "To ignore the knowledge of to-day is vicious; to avail of it and practise it is virtuous." Whenever we step aside from a utilization of all available knowledge and skill for the advancement of the material prosperity of the people and the general sanitation we become recreant to our trust, and no consideration of petty economy, of party success, or of national indebtedness to an unfit candidate can remove our action from the category of the vicious and destructive. In regard to the main subject before us—the inspection of animals and meats—we have the highest moral as well as material reasons for securing skilled and honest officials. The movement is destined to conserve the numbers and health of our live stock, without which the native fertility of our soil must steadily decline, and it is destined to protect that most sacred of all trusts, the health and lives of our people, and in consequence the power and prosperity of the nation.

## CLINICAL MEMORANDA.

### REPORT OF A CASE OF MEDIASTINAL TUMOR, WITH SPECIMEN.<sup>1</sup>

BY NATHAN JACOBSON, M.D.,

PROFESSOR OF CLINICAL SURGERY AND LARYNGOLOGY, COLLEGE OF  
MEDICINE, SYRACUSE UNIVERSITY.

MR. C., a civil engineer, fifty-six years old, had been under my professional care at various times for ten years

for slight ailments. His father had died at the age of eighty-six of carcinoma, of the face; his mother at eighty, of apoplexy, having for five years prior to her death exhibited the usual cerebral disturbances incident to atheromatous vascular degeneration. The patient was of an exceedingly nervous temperament, and had been in the service during the Rebellion.

Early in the summer of 1890 he felt unusually enfeebled, and went into the mountains of Pennsylvania to recuperate. He returned in July, 1890, and while engaged in some professional work, on the 28th of the month, he was seized with vertigo and was obliged to go home. Being called, I found his face congested, the vessels of the head and neck greatly engorged; the latter were so distended that the normal contour of the neck was entirely lost. The voice was of a piping character; vertigo persisted; the pulse was somewhat irregular, but soft and not disturbed as to frequency. Recognizing the presence of cerebral congestion due to some obstructive trouble, I prescribed Rochelle salts. For the succeeding four days he was confined to his room, when the vertigo disappeared and the congestion of the head was materially improved. The veins of the neck, and particularly those of the right side, however, remained engorged.

Within a week the clinical picture gradually changed, and venous engorgement manifested itself in the left arm. The swelling slowly extended from the axilla to the hand. By the 10th of August, 1890, the hand and forearm were considerably enlarged. The surface veins of the chest had increased in size, and could readily be seen making a vast network. Change of position, keeping the hand elevated, while the patient was in a recumbent posture, did not in any way affect the size of the left upper extremity. The chest and abdomen were carefully searched for the cause of the obstruction, but physical examination revealed nothing. The opinion was expressed that the existence of a mediastinal tumor would alone account for all the symptoms. The patient denied syphilitic infection; yet, thinking that the obstruction might possibly be due to pressure from a syphiloma, the iodides were administered, beginning with ten-grain doses three times daily; strychnine and digitalis were also prescribed.

The man complained of feeling weak, but was otherwise not materially disturbed. After a few days of confinement at home, he was able to be out and to call upon me at my office. The left upper extremity continued to swell and grow cold. It became somewhat edematous and the edema extended to the chest. He reported that each morning upon arising, his face was quite swollen, but the engorgement disappeared somewhat after being about.

By August 20th the left arm measured 13 inches in circumference, as against 10 for its fellow at a corresponding point; the left forearm  $12\frac{1}{2}$ , while the right was but  $9\frac{3}{4}$ . The swelling and edema of the left side of the chest increased, until the man appeared to have a well-developed left mammary gland. At this date the abdominal veins had greatly increased in size, and the area of hepatic dulness was also increased. The right arm now became painful, although not swollen or edematous. The iodides had been steadily increased, so that the dose taken August 20th was thirty grains of the potassium salt three times daily. The urine was color-

<sup>1</sup> Read at the meeting of the Central New York Medical Association, May 31, 1892.

less, of a specific gravity of 1008, alkaline, and contained neither albumin nor other abnormal ingredients. Four days later still, further venous stasis of the left arm was apparent. On the right arm near the elbow an edematous area about two inches in diameter had appeared. The apex-beat of the heart was slightly displaced to the left. The pulse at the right wrist was 105; at the left it could not be made out at all, because of the edematous swelling. The surface veins of the chest and abdomen were rapidly increasing in size. The patient was strongly advised to abandon his work, for up to this time, and even later, he persisted in performing many arduous duties.

During September, 1890, the patient was confined to his house. The swelling and edema of the entire left upper extremity continued, until it seemed as though the skin was stretched to its utmost. Early in the month the right arm began to swell, the swelling extending from the point already mentioned, at the inner side at the elbow, to the forearm and the hand. The veins of the chest and abdomen continued to increase in size.

At the close of the first week of September the man was compelled to sit up constantly, night and day. Any attempt to assume the recumbent posture would produce most distressing dyspnea. He was unable even to sit propped up in bed, but was obliged to occupy a chair, and to secure what sleep he might with his head bent forward and resting upon another chair or upon a table. The respirations grew steadily shallower, and the slightest effort made the man pant. At this time both lower extremities became edematous, the edema reaching to the knees.

On September 25, 1890, the swelling disappeared from both hands and grew less in the forearms and arms. An effusion was present in the right pleural cavity. The area of liver-dulness was increased, so that on October 1, 1890, it extended three inches below the border of the ribs and across the abdomen almost to the free border of the ribs of the left side. The upper border of dulness on the right side was at the level of the third rib, partly from the existence of the pleural effusion. The spleen was also enlarged. Although examination of the heart failed to detect any abnormal murmurs, palpation readily recognized the *fremissement cataire*. The patient's face had grown paler and thinner; his voice was stronger, but his speech was very "choppy." The iodides had been continued in increasing doses, until one hundred and fifty grains were being taken daily. As no improvement, however, followed their administration, they were discontinued, and the medication was reduced to the giving of strychnine in  $\frac{1}{16}$  grain doses three times daily. The patient's mind remained clear, and he suffered but little pain.

Early in October, 1890, he decided to go to a water-cure located in Geneva, where at least he might secure absolute rest and receive better personal attention than was possible at home. At this institution the diagnosis of mediastinal tumor was doubted, and the patient was subjected to massage and baths. He sent me word, however, that he was able to breathe better and even to lie down and sleep.

I saw him but once during the spring of 1891, on March 14th, when I found the pleural effusion lessened, and the edema of the extremities greatly improved. The

pulse, however, remained above 100, while it was very feeble and intermittent. The veins of the chest continued prominent, while those of the abdomen became simply enormous in size. A limited area of dulness could be made out over the upper portion of the sternum and an inch to the right.

The man was able to walk about during the summer of 1891 and ceased to take medicine. In fact, I failed to see him at all between March and September, and his apparent improvement was so great that his friends even questioned my diagnosis and prognosis. Upon his return to me in September, 1891, I found him substantially free from edema of the upper extremities. On the inner aspect of the arms exquisitely tender and slightly edematous areas persisted. The venous engorgement of the surface, the hepatic and pleural dulness remained, but lessened in extent. Breathing was superficial, and dyspnea, associated with suffocative attacks, was readily provoked. The voice was weak. Inspection of the chest now showed a prominence of the inner extremities of the second and third ribs of the left side and the sternum at this level. This area was exceedingly tender, and the patient could not bear to be percussed at all. Dulness, however, could be mapped out as reaching to the clavicle, and laterally to the mammary line and downward to the fourth rib. At the most prominent portion of the sternal projection a small tumor could be seen and felt. Numerous secondary glandular growths appeared upon the skin, some of them quite large and many even more painful to touch than the sternal growth. The urine was found to be cloudy, pale-yellow, of a specific gravity of 1016, and acid in reaction; earthy phosphates were in excess; no albumin was present; a few uric-acid crystals and pus-corpuscles were found. Aside from the respiratory difficulties the patient had lost all the urgent symptoms that had been so distressing a year before. The edema of the upper extremities never returned. He was able to lie down and occupy his bed at night; he was very feeble, yet walked about slowly with the aid of a cane, and was not again confined to his room until January, 1892, when the dyspnea had become very distressing and persistent.

He was once more compelled to spend his days and nights in a chair, and the barest movement greatly intensified his orthopnea. His face was again congested and apparently fuller, although his body was very much emaciated. The veins of the neck and chest remained engorged, while those of the abdomen were numerous, being almost the size of a man's finger. The tumor steadily crowded the chest forward, the area of dulness increased, and over it tubular breathing could be heard. The heart was irregular and feeble in action, and showed the purring vibration. A pleural effusion was present and the liver-dulness was unreduced. In this condition the patient passed the month of January, 1892, unable to take but a step or two without being distressed for want of air. His mind remained clear. Defecation was exceedingly difficult. His appetite failed.

On about the 10th of February, 1892, with increasing exhaustion and very superficial panting respiration, he became steadily more oblivious to what was transpiring about him. In this exhausted condition he again assumed the recumbent posture. For the nearly two weeks

that elapsed until his death occurred he grew gradually more feeble and died very peacefully.

The autopsy was made on the day after death, in the presence of Drs. Didama and Sears. After section of the costal cartilages it was found impossible to raise the sternum at the point of penetration by the tumor. A portion of the sternum four inches in length and three in width was therefore cut out, the center of which was occupied by a portion of the tumor; this had infiltrated the bone from within and appeared upon its anterior surface as a growth two inches in length by one and a half inches in width and about one-half inch in thickness. The right pleural cavity contained about one quart of fluid. The tumor had so thoroughly infiltrated, and, in fact, become a part of the thoracic organs, that their removal could only be accomplished *en masse*. This being done, it was found that the tumor cemented the chest contents to the sternum by a hard, infiltrating nodular mass, which not only surrounded but literally invaded the venous channels leading to the heart. The trachea was compressed anteriorly and upon the right side, and was itself firmly adherent to the growth. The right bronchus was entirely imbedded. The tumor extended into and, in fact, absolutely through the right lung, separating the upper from the middle lobe by a rounded, projecting mass that extended downward a distance of five inches, encircling the descending aorta, and at its widest part measuring five inches in diameter. Throughout, the tumor presented lobulated outgrowths. Only the lowest portion of the inferior lobe of the right lung exhibited any patent air-cells; the remainder was a solid mass impenetrable to air. Anteriorly the tumor surrounded the arch of the aorta, constricting it and overlapping the upper portion of the base of the heart. Not stopping here, the tumor absolutely invaded the heart itself. A prolongation fully two and one-half inches in length, constricted at its center to such an extent as to be almost cut in two, extended into and almost completely filled the right auricle. Its presence had, no doubt, led to marked distention of the auricle, which was considerably dilated and its walls much attenuated. The growth invaded the heart-structure and was quite firmly adherent to the auricular walls. No secondary growths appeared in the liver. The left lung was free from invasion. The kidneys were normal. Dr. Sears made a microscopic examination of the tumor, and reported the growth to be a small round-celled sarcoma. In some parts the cells were very numerous, the inter-cellular substance slight in amount, and the bloodvessels thin-walled. In other parts the connective tissue was very dense and the bloodvessels more highly organized.

REMARKS.—I do not intend to prolong my report of this case by any extended remarks. I present the specimen, which better than any words makes manifest its most unusual features. I desire simply to emphasize the very rapid and serious manifestations of the disease during its early months. For two months following my first visit, at the close of July, 1890, its active development justified the prediction that death could not be long delayed. Yet, despite the fact that the tumor must have been steadily growing and constantly invading vital structures, as the vessels accommodated themselves to the pressure and collateral circulation carried

the blood to the previously obstructed areas, a great respite was granted.

We cannot but marvel at the rare endurance of a heart invaded by a malignant growth that occupied one of its chambers almost to the exclusion of the entering blood-current. Tumors of the mediastinum are rare enough, but in reviewing the literature of the subject I have as yet failed to find one recorded that exhibits an invasion of the heart similar to that here reported.

#### GUNSHOT WOUND OF THE ABDOMEN DURING PREGNANCY; RECOVERY.

BY C. A. MILNER, M.D.,  
OF WYOMING, IOWA.

WHILE Mrs. M., twenty-one years old, in the sixth month of pregnancy, was oiling a 32-caliber revolver, it accidentally went off. The ball struck a steel of her corset, was deflected, and entered the abdominal cavity on a line drawn from the left nipple to the anterior superior spine of the right ilium, three inches from the ensiform cartilage, thence it pursued an upward, backward, and outward course—passing through the skin, superficial fascia, the external and internal obliquus and transversalis muscles, both layers of the peritoneum, the external border of the central tendon of the diaphragm, one inch from the apex of the heart, the pleura, and lung, and became lodged in the lung at the posterior border of the serratus magnus muscle.

I was called five minutes after the accident. The woman, unable to lie down, was sitting on a couch, faint. I gave her a dram of whiskey in hot water. In a few minutes she could lie down on the couch. She immediately began to expectorate bloody, frothy mucus, and was in great pain. I gave morphine hypodermically, and she could then lie on her side. There was some shock. The pulse was quick and strong. The woman was remarkably cool and self-possessed, and did not seem to fear the outcome of the accident. There was very little hemorrhage from the external wound, but more through the bronchial tubes.

I dressed the external wound antiseptically. After picking away foreign particles I washed the wound thoroughly with a solution of boric acid, dusted boric acid over the surface, and applied borated gauze and adhesive straps. The left half of the chest was strapped, to secure as complete immobility as possible. I directed the patient to lie upon the right side, so as to secure drainage through the bronchial tubes and the external wound. The chest was raised higher than the hips. I ordered some whiskey punch. The cough was very distressing. For its relief I gave a mixture containing syrup of squills, morphine, glycerin, chloroform, and hydrocyanic acid.

The pulse was 90, the temperature 100°, the respiration 25. The breathing was of superior costal type, and shallow. The bowels had acted on the morning of the accident. There was no vomiting. The stomach was empty. There was very little nervous disturbance. The woman was cheerful. At 9 P.M. I prescribed syrup of ipecacuanha and opium. The patient slept fairly well. I saw her every two hours on the following days. At 12 midnight the temperature was 100.5° F. At 2 A.M. the patient coughed up some bloody, tenacious sputa. Expectoration was difficult on account of pain. The pulse



was 100, the temperature 100.5° F. Headache was complained of. I administered a powder of acetanilide and caffein citrate, which afforded relief. The woman took some nourishment, including milk toast and a poached egg. After eating, I gave her pepsin and dilute hydrochloric acid to lessen peristalsis and aid digestion. Before eating, I gave her a capsule of iron chloride and glycerin. In case of traumatism and in pregnancy the white blood-corpuscles are increased, the red ones diminished in number, and the proportion of hemoglobin is diminished. Iron is therefore indicated. A greater amount of sodium chloride was added to the food than usual. Sodium chloride exerts a beneficial influence in cases of penetrating wounds of the thorax. Fetal movements were first felt during the day. The respirations were 28 in the minute. Diaphragmatic breathing was almost entirely wanting on the left side. The urine was high-colored and loaded with urates, uric acid, and phosphates; the chlorides were diminished.

There was no flatulence. The patient was absolutely quiet. At 9 P.M. the temperature was 100.8°, the pulse 100, of high tension, hard and wiry. Symptoms of localized peritonitis appeared. I ordered hot applications to the epigastrium, and gave powders of ipecacuanha and opium. There was no vomiting. The heart-sounds were intensified. I gave acetanilide, and the pulse became softer. During the night the cough-mixture was repeated twice. On the following morning the sputum was muco-sanguineous; the temperature was 99.8°. The patient still lay on the right side. She took egg-nog and toast, and passed a good day. I dressed the external wound. There was no suppuration, but evidence of occlusion of the external wound, which I dusted with boric acid and covered with borated gauze. At 11 P.M. there was great thirst, and the temperature was rising. There was more cough, and the breathing was panting and accelerated to 32 per minute. The face was flushed; the temperature was 101.5°. Evidences of pleuro-pneumonia appeared. By means of acetanilide and caffein citrate, I kept the temperature within 100° F. On the following day there was some sweating. The fever was less. The urine was scanty and high-colored. The appetite was good. The patient took milk and lime-water. At 5 A.M. I gave potassium acetate. At 11 A.M. the urine was increased in quantity. The proportion of potassium salts and chlorides was increased. Thirst was relieved by small pieces of ice in mouth. At 9 P.M. the temperature was 101° F.; cough had increased; the pulse was 100, bounding and full. The woman got some sleep during the day. The urine contained no albumin; its specific gravity was 1030. There was no pleuritic effusion. Some crepitation was to be heard. The respirations were 32, panting. Bronchophony was evident. Percussion revealed no abnormality. On auscultation, dry, crackling, and crepitant râles were heard at the end of inspiration. The patient did not sleep well that night.

On the morning of the next day the pulse was 96, the temperature 100.6°. The sputum was rusty. The woman took nourishment. There was slight dullness on percussion over the left lung. At 12 o'clock noon the woman took nourishment and some castor oil. There was slight dullness over the left lung, with increased vocal resonance in a localized area. The breathing was bronchial,

28 times to the minute. Moist râles and some gurgling were heard, but no bronchophony. The sputum was rusty and muco-purulent. No pneumonia-cocci were found, and but few pus-cells. In the afternoon the expectoration was easier and contained some broken-down tissue. On the next day the temperature was 100°, the patient slept better, and cough required less effort. A day later the temperature was 99.6°. The patient took milk and eggs. The sputum was muco-purulent. The external wound showed signs of cicatrization. The greater part of the drainage was evidently taking place through the lung. Strong coffee was ordered as a beverage to stimulate the arterial system, especially the uterine arterial system, and to lessen the amount of blood at the seat of injury.

The pregnancy seemed to exert a favorable influence on the outcome. The cutaneous circulation was good. Perspiration was free. The temperature was 99°, the respiration was 24; inspiration was deeper. On the next day the temperature was 98.8°, the pulse 80. Backache was relieved by massage. In the evening the temperature was 99°. Mucous râles and cavernous sounds were heard over the course of the bullet. The sputa was light in color, the breathing deeper—24 times per minute—and without pain. The affected side could now be moved. The movements of the fetus were again perceived. I could locate the ball, but at no time could detect amphoric breathing or gurgling over the site. There was perfect drainage through the lungs; consequently there was no indication for making an incision and extracting the ball, with the risks of infection. The ball finally became encysted. It caused no pain or inconvenience whatever. On the following day the temperature was 98.8° F., with very little cough. The appetite was good. The external wound was cicatrized. There was no pain on inspiration. The urine contained an increased amount of chlorides. The phosphates, uric acid, and kreatin were diminished. The evening temperature was 98.6°. On the next day the temperature was 98.4°. The patient was now convalescent, and sat up. Sixteen weeks later she gave birth to a perfectly formed and healthy female child, weighing seven pounds.

#### A CASE OF IDIOPATHIC PHLEBITIS.

By JOHN O. BROWN, M.D.,  
OF MINNEAPOLIS, N. D.

On February 5, 1892, Mr. H., a Swede, seventy-two years old, presented himself, stating that about two weeks previously he had noticed a painful spot on the ulnar side of the left wrist, near the median line, at the site of which a small ulcer formed. A week later the anterior ulnar and basilic veins became painful and swollen so as to resemble thick cords beneath the skin, reaching from the ulcer at the wrist to the axilla. The man had had no chill, and the pain was not sufficient to prevent him enjoying sound and refreshing sleep. He appeared hale and hearty, and there was no indication of the absorption of pus. There was no history of syphilis.

Upon examining the arm I found considerable edema; the skin over the affected veins was of a coppery-red color, looking as if a broad stripe had been painted from the axilla to the wrist. On the forearm there was a sinus

following the course of the affected veins for a distance of about five inches, and discharging pus and serum at the ulcer on the wrist. Above this sinus were several swellings in the course of the affected veins. These swellings were directly over the inflamed veins, and fluctuation could be detected in them.

The case was diagnosticated as one of idiopathic phlebitis, by extension involving the surrounding tissues.

It was directed that the arm be carried in a sling during the day, and at night to be slightly elevated on a pillow at the side. Tincture of the chloride of iron was prescribed in fifteen-drop doses, to be taken in water before each meal. A generous diet was also advised. Each swelling along the course of the affected veins was freely incised, and the sinus was opened so as to allow thorough drainage. Wherever there was any pus I injected hydrogen dioxide (fifteen-volume solution). The sinus was thoroughly irrigated with the same solution. The irrigation was repeated daily for over a week, when I had the satisfaction of seeing the small abscesses heal. The sinus remained, but in no worse condition. The edema of the surrounding tissues had subsided, and there was no pain along the affected veins. The veins were not so thick as they had been. The coppery-red stripe over them gradually narrowed until it was obliterated in some places. The patient's appetite was good throughout his illness. He was given a solution of corrosive sublimate (1:2000) and a syringe, and instructed how to daily irrigate the sinus at home.

He returned once a week to have me look at his arm, and, as at the end of a month the sinus did not seem disposed to heal, I bandaged the arm to support the circulation. This had the desired effect, and the sinus soon healed.

According to Virchow, idiopathic phlebitis is a comparatively rare affection. Hamilton says that it may result from exposure to cold. Wyeth, in his recent admirable work on *Surgery*, says that, from whatever cause it may proceed, it usually affects the veins of the lower extremities.

Taking into consideration the age of the patient—seventy-two years—it seems to me that the cause of the condition in the case here reported lay in senile changes in the enlarged veins, in conjunction with exposure to cold while the patient was engaged in his accustomed light farm-duties in the winter-time. The sluggishness of the flow through the enlarged veins at the wrist resulted in stasis of the blood, which being acted upon by intense cold, probably became coagulated so as to form a thrombus. This thrombus, acting as a foreign body, gave rise to inflammation in the tissues surrounding the vein at a point exposed to the most movement—*i. e.*, the wrist. Here was the initial lesion, and from this the inflammation spread along the vein.

On the first of May the affected veins still felt like heavy cords beneath the skin, and I believe that the function of both veins has been obliterated throughout the extent that was inflamed. Had the inflammation extended only a short distance along the arm instead of into the axilla, I would have considered the wisdom of excising the whole of the inflamed portion; but, as there was no means of deciding how close to the heart the inflammation had extended, the operation would have been of doubtful propriety.

## MEDICAL PROGRESS.

**A New Osteoplastic Procedure in the Treatment of Spina Bifida.**—BOBROFF (*Centralbl. für Chirurgie*, 1892, No. 22, p. 465) has reported the case of a boy eight years old, with a sacral myelo-meningocele, in which he employed a new procedure. The sac had a diameter of almost two inches at its base and a height of more than two inches and a half. The sac could be emptied by pressure, which caused pain and vertigo. Since birth there had been rectal and vesical incontinence. The skin-covering was removed between two semilunar flaps. Some nerve-fibers of the cauda and the termination of the cord were freed from the inner surface of the sac and deposited in the sacral canal. The lining membrane of the sac was now removed. From the adjacent crest of the ilium a segment of bone, large enough to close the defect in the sacrum, was removed, but permitted to remain adherent to its nutrient attachments, the periosteal surface presenting posteriorly. For the sake of security, two bone-sutures were introduced. The wound was then closed and provision made for drainage inferiorly. The boy was made to assume the prone position. For a few days there was slight elevation of temperature and considerable discharge. The drainage-tube was removed at the expiration of two days. In the course of two months the transplanted segment of bone had become quite consolidated. The sphincters were at first stimulated by faradism and then by galvanism. At the expiration of five months considerable improvement had taken place.

**Steel in the Iris for Twenty-seven Years.**—As a sequel to the report of a case in *THE MEDICAL NEWS* of October 10, 1891, p. 428, in which a bit of steel had been lodged in the iris for twenty-seven years, KEIPER (*Indiana Medical Journal*, July, 1892, p. 8) records the further history. The man presented himself with an attack of intense inflammation of the affected eye. The employment of leeches, atropine, and hot fomentations not proving sufficient, an attempt was made to remove the foreign body by means of an electro-magnet. As there appeared to be danger of bringing away the adherent iris with the bit of steel and of dislocating the lens, an iris-forceps was employed, and the piece carefully removed by teasing. The fragment of steel was  $\frac{3}{8}$  of an inch long and quite irregular. The ultimate result was eminently satisfactory.

**Reinforcement of the Knee-jerk.**—ROSENBACH (*Centralbl. f. Nervenheilk. u. Psychiatrie*, July, 1892, p. 336), recommends that in cases in which the knee-jerk cannot be elicited by simply striking the patellar tendon or by striking the tendon while the upper extremities are engaged in some voluntary muscular movement, the patient be directed to rapidly read aloud while the tendon is struck. An absence of response is conclusive. By the act of reading the attention is so engrossed that the influence of cerebral inhibition and of voluntary muscular effort is removed.

**The Bacillus of Chancroid.**—At a meeting of the French Society of Dermatology, QUINQUAUD (*La Médecine Moderne*, 1892, No. 28, p. 457) reported that in a number

of cases of chancroid he had found the bacillus described by Unna. The same organism was always found in large numbers. It was rod shaped, with rounded extremities, and usually arranged in chains. It was present in the depth of the tissues, especially in the lymphatic and intercellular spaces, but never within the cells themselves. Its staining was difficult, and was best secured by a carbolized blue.

**A Delicate Reaction for the Presence of Albumin in the Urine.**—SPIEGLER (*Internationale klin. Rundschau*, 1892, No. 27, p. 1112) recommends the following test-solution for the detection of the presence of albumin in urine: Tartaric acid, 10 grains; mercuric chloride, 20 grains; white sugar, 50 grains; water 1 ounce. The urine is filtered, slightly acidulated with acetic acid, and carefully made to overlay the test-solution in a test-tube. If the urine contain albumin, a sharply-defined white ring appears at the line of contact. Peptone gives no response, while propeptone does.

**Death During Pregnancy Caused by a Swallowed Spoon.**—LIHOTZKY (*Centralbl. f. Gynäkol.*, 1892, No. 26, p. 489) has reported the case of a woman, thirty-three years old, in whom a rapidly fatal peritonitis developed in the eighth month of pregnancy. At the autopsy, the duodenum was found perforated by a silver spoon that had been swallowed two and a half years previously, although no symptoms had been present in the interim, and the event had almost been forgotten.

**Appendicitis.**—POTHERAT (*Rev. Gen. de Clin. et de Thérap.*, 1892, No. 28, p. 440) expresses the opinion that surgical interference for the relief of appendicitis is indicated in case of perforation, however small the chance of success appears to be; in case of suppuration in the right iliac fossa; in case of recurrent paroxysms that increase in frequency and intensity. The dangers of operation are not greater than the risks of suppuration or perforation.

## THERAPEUTIC NOTES.

**The Cure of Tetanus with the Antitoxin Obtained from the Serum of an Immune Animal.**—CASALI (*Centralblatt f. Bakteriol. u. Parasitenk.*, xii, 2 u. 3, p. 56) has reported the case of a woman, twenty-two years old, who, seven days after having received a lacerated wound of the right foot, and walking a considerable distance over damp ground with unprotected feet, presented manifestations of developing tetanus. For a week, under ordinary treatment, the symptoms progressively increased in intensity. Specific treatment was now proposed and assented to. Tetanus-bacilli were found in the pus from the wound on the foot. Six injections of the antitoxin prepared from the blood of a dog immune to tetanus were made at intervals of twelve hours; the first five contained 25 centigrams, and the sixth 15 centigrams. Improvement soon set in, and was progressive to perfect recovery.

**The Toxicity of Exalgin.**—BROADBENT (*Lancet*, No. 3596, p. 256) has reported the case of a man, twenty-six years old, who presented toxic symptoms after the in-

gestion of twelve grains of exalgin for the relief of neuralgia. Four grains were taken in the evening, with relief from the pain, though giddiness was felt. The pain returning early on the following morning, twelve grains more were taken. The man immediately became dazed, fell to the floor, and remained unconscious for half an hour, during which he frothed at the mouth. The pulse was feeble and slow, while epigastric pain and noises in the head were complained of. The subcutaneous injection of  $\frac{1}{10}$  grain of apomorphine was followed by thorough evacuation of the stomach. Subsequently,  $\frac{1}{300}$  grain of strophanthin and ten minims of ether were administered, and the man slowly rallied.

**Methyl violet in the Treatment of Diphtheria.**—JAENICKE (*Therapeutische Monatshefte*, 1892, H. 7, p. 340) has employed a saturated solution of methyl-violet in the treatment of diphtheria. The application is made by means of a pledget of cotton, and is repeated in the course of from two to five hours, as soon as the discoloration has disappeared. Methyl-violet exerts an inhibitory influence upon the development of the diphtheria-bacilli, and possesses the advantage of being relatively non-toxic.

HOERING (*Memorabilien*, 1892, H. 6, p. 327) reports fifteen cases of diphtheria in the treatment of which he employed topical applications of a three per cent. solution of methyl-violet, with most satisfactory results. Two of the cases that came under observation in a condition of profound intoxication died.

**Pheno-salyl: an Antiseptic Mixture.**—The following combination is recommended as an active and soluble antiseptic:

R.—Acid. carbolic.	.	.	.	.	3jss.
Acid. salicylic.	.	.	.	.	gr. x.
Acid. lactic.	.	.	.	.	gr. xx.
Menthol.	.	.	.	.	gr. j.—M.

The three acids are warmed to liquefaction, and the menthol is added. The mixture is to be diluted as required.—*Annales de l'Institut Pasteur; Journ. de Méd. et de Chir. prat.*

**Potassium Bichromate as an Expectorant.**—Based upon an extended experience, HUNT (*Brooklyn Medical Journal*, 1892, No. 8, p. 516) recommends the employment of potassium bichromate as an expectorant, especially in catarrhal conditions of the respiratory mucous membrane. The remedy is best administered by rubbing up one grain with nine grains of sugar of milk, and adding the desired number of teaspoonfuls of water. A child a year old may be given from gr.  $\frac{1}{10}$  to gr.  $\frac{1}{20}$ , at intervals at first of ten or fifteen minutes, but subsequently less frequently.

**Intra-uterine Injections of Glycerin to Stimulate Contractions of the Uterus.**—PELZER (*Archiv für Gynäkologie*, Bd. xlii, H. 2, p. 220) reports a number of cases in which intra-uterine injections of glycerin were employed to stimulate contractions of the uterus, both in premature labor and in labor at term. From an ounce and a half to three ounces of glycerin were, by means of a syringe and a catheter, introduced between the membranes and the walls of the uterus as high up as possible, without rupture of the membranes.



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SATURDAY, AUGUST 27, 1892.

### AS TO A FOUR YEARS' COURSE.

AN esteemed correspondent calls our attention to a number of facts that he deems militate against the position taken by THE NEWS in regard to the compulsory four years' course. At Ann Arbor, which was the first college to adopt the four years' course, as well as at Harvard and Columbia, the term is already nine months, and at the University of Pennsylvania the term is seven months, and will be lengthened; yet at all of these institutions a course of three years is found to be too short in which to teach all that modern medicine demands, and what is taught overworks the student.

The University of Pennsylvania, like Harvard, has adopted a rule admitting to the second year's class men with a college degree who are qualified in general biology, human and comparative anatomy (including embryology and histology), botany, chemistry, and physics; such students to make up materia medica and pharmacy. Exception is likewise taken to our criticism of chemical teaching in so far as it applies to certain schools.

We did not mention the facts cited by our correspondent, because we were dealing with a general question and cited special schools but by way of illustration, not with any view to special criticism.

That the colleges named have adopted the nine-

months' term proves that we are correct in our position that all colleges should adopt it.

That advanced standing is granted to qualified students confirms our position that the so-called first year in our four-year courses is virtually a preparatory course, and should be named and organized accordingly. Even PROVOST PEPPER, than whom none has given greater proof of devotion to the higher education, and whose courage is as undoubted as his opportunities for observation are unexcelled, felt constrained in his address at Boston to question the practical wisdom of lengthening the medical course to four years, at the same time that the requirements for admission were increased. And has not PRESIDENT ELIOT, in advocating the curtailment of the course in arts to three years, virtually expressed the same fear?

But it is in the preliminary training, rather than in the teaching in our medical schools, that America is now at fault.

Thus, great as is the ability and merit of certain teachers, and advanced as are the problems with which, *e. g.*, PROFESSOR VAUGHAN deals, and doubtless teaches to the chosen few that can comprehend them, the broad fact remains that the general course at medical colleges cannot deal with that advanced biochemistry that the time demands, simply because the students have not done the preliminary work necessary to its understanding.

The place to begin to reform medical education is at the foundation, not at the roof. We are but confirmed in our opinion that the proper plan is to change the standard of entrance-qualification by increasing the breadth of the preliminary education demanded, thus making that preliminary standard a scientific rather than a merely literary one; to give two terms of nine months each of recitations and laboratory-work, with a modicum of clinical lectures, and a third term of laboratory and hospital work in sections, with clinical lectures for the class as a whole. If it were practicable—as we admit it is not—the degree given for this should be Bachelor of Medicine; and the doctorate should be won by additional work in investigation, in literature, or in practice.

This plan would, of course, require a largely increased teaching staff, while the number of students would be diminished; it might necessitate the consolidation of rival schools here and there; and might cause the death of other schools; none of which events would be a public misfortune.

### THE TELEOLOGY OF SUNBURN AND TAN.

THE extreme heat of the summer through which we are now passing has called forth from all sides demands for preparations for the prevention of sunburn and tan. Divers unguents and lotions have been recommended, but with these we shall not deal, choosing rather to call attention briefly to the pathology and to the possible teleology of the affections.

When delicate faces and arms are exposed to sunlight there develops a hyperemia more or less acute, and in some even a severe dermatitis, with induration, heat, redness, and edema. If the burning be intense, desquamation follows, and later there is an increased deposition of pigment in the deep portion of the rete Malpighii.

The pathologic process is probably to be explained by a necrosis of cells, resulting from the action of the heat and light. Such a cell-death would be accompanied by the setting free of certain substances, some of which are positively chemotactic. Hence may result the ordinary phenomena of inflammation, and, following the subsidence of the inflammatory process, pigment-making cells manufacture quantities of dark pigment-granules, and store them up in connective-tissue cells that lie between the columnar epithelial cells that rest upon the basement membrane separating the epidermis from the cutis vera. When the burning takes place more slowly such a deposition of pigment may result without the occurrence of acute inflammation.

From a teleologic standpoint some new light has been thrown upon this matter of pigment-formation by the ingenious speculations of BUCHNER ("Ueber die Schutzstoffe des Serums," *Berliner klin. Wochenschrift*, 1892, No. 19) in a recent article on the protective substances of the blood-serum. The fresh blood-serum of man and animals, besides possessing the power of quickly killing living bacteria (GROHMAN, NUTTALL), and of destroying the red blood-corpuscles of an animal of a different species (LANDOIS), is by some believed, under certain circumstances, to exert an antitoxic action upon the poisons produced by the microorganisms of a given disease.

BUCHNER has shown that these properties of the serum—germ-killing, globulicidal and antitoxic—lie in certain obscure chemical bodies of extreme instability. Warming the serum for half an hour at a temperature of 55° C. destroys them, as does also

the action of diffuse daylight, and more quickly still the rays of direct sunlight.

While, therefore, light is an important element in the growth and development of most animals and plants, yet light in the wrong place would probably have a deleterious influence, and it seems as if it were by no accident that certain organs have been buried in the interior of the body and covered with a protecting integument.

In the South the protective powers of the skin are increased by the presence of intense natural pigment-deposits, and we are tempted to regard the sunburn and tan of spring and summer as an approach to such a protective pigment-deposition, the pigment in these cases probably having its origin in disintegrated hemoglobin.

## SELECTION.

### HIGHER MEDICAL EDUCATION.

IF we are to have a continuous advance in the standard for admission to our colleges, and then to exact a prolonged course of medical study, it will break the backs of the best schools. We cannot alter the social habits of a nation to make them conform to our notions of what the standard of teaching in this or that department shall be; we cannot reconcile any large proportion of our fellow-citizens to seeing their sons or their wards delay, until the age of twenty-five, twenty-six, and twenty-seven years, entrance upon practical life in order that they may win a B.A., or a B.S., and then get their M.D. in a four-year medical school. I am as convinced, as of anything, that it is absolutely necessary for the medical schools that are going to exact a four-years' course to make provision for obtaining the double degree in less than eight years. That this must be accomplished in some way I feel absolutely certain.

Do not let us handicap medical education too heavily. Do not let us ask our Faculties to turn out thoroughly trained men, trained at the bedside, giving that clinical instruction which alone renders a man fit to take charge of suffering humanity, and deny them the laboratory facilities which are necessary. Do not ask them to set a high standard of admission; a higher standard of entrance examinations, to pass a second examination before a State Board of Examiners, and put the whole of this on at the same time that we appeal to them to take a college course for four full years. If you provide your medical school with endowment, you will accomplish this for a limited number of the highest grade of students, but you will shut out from your doors those whom I would gladly see here, not to swell your ranks, but because I hold that no matter where the doctor goes to practise his calling—and the more remote the point, the further from the centers of education, the further from the chances of professional assistance, the more essential does his thorough, practical equipment become—you will shut out from your doors hundreds of those who are

the very men we would be glad to see here. You need more fellowships, more scholarships, in your medical department to-day, upon its advanced scale of medical instruction, than you need in any other department of the university. You must have endowment for your hospital. You must have endowment for your professors' chairs.—DR. PEPPER, *Boston Medical and Surgical Journal*.

## REVIEWS.

A TEXT-BOOK OF THE PRACTICE OF MEDICINE FOR THE USE OF STUDENTS AND PRACTITIONERS. By R. C. M. PAGE, M.D., Professor of General Medicine and Diseases of the Chest in the New York Polyclinic, etc. Pp. 568. New York: Wm. Wood & Co., 1892.

THE chief objects of this book, as stated in the preface, are to facilitate clinical instruction and to enable both physician and student to obtain in brief the most practical as well as the most scientific view of the various subjects considered in a work on medicine.

Accordingly, we find the articles touching only on the chief points in pathologic anatomy and etiology, for instance, while the treatment outlined is fully in accord with recent advances; not only are drugs mentioned, but, in many instances, both the prescription and dose are given.

We can hardly endorse the statement "that many persons addicted to the opium-habit overcome it by sheer force of will-power." Such has not been our experience, nor does it coincide with the recorded testimony of most clinical observers.

The reviewer's notice has often been directed to a frequent error that occurs not only in medical books and periodicals, but also on druggists' labels, etc., of using *spirits* for *spirit*; for instance, sweet *spirits* of niter, aromatic *spirits* of ammonia. This error is of frequent occurrence throughout the pages of the present volume.

In the article on "Malarial Fevers" no mention is made of the diagnostic value of the presence of the blood-parasites that have been studied and described by Laveran, Marchiafava and Celli, Golgi, Osler, Dock, and others.

The temperature in typhoid fever, when it rises above 103° F., is directed to be treated in one of two ways: (1) by the internal administration of drugs, and (2) by the application of cold by some means.

Among the drugs mentioned, the author prefers, in the order named, antifebrin, phenacetin, antipyrin, and quinine. In our experience the employment of depressing agents, such as the first three drugs, should be reserved for use only after a fair trial of well-known remedies, such as quinine, cold or tepid sponging, etc. If any of the coal-tar products is used, antipyrin is, we believe, the least dangerous and the most successful.

In conclusion, we think that the present volume will be found acceptable to the busy practitioner as a work for easy and ready reference to obtain a practical view of the latest treatment of disease; but we cannot advise the undergraduate to procure it for use as a text-book; for we are among those who believe that the foundation of a student's knowledge of medicine should be as thorough as possible—especially in the symptomatology,

etiology, pathology, and diagnosis of disease—on which points Dr. Page's book, as it were, is a mere compend. This fact is stated, not to the discredit of the work, for it is an excellent medical treatise, and well worthy of perusal by the practitioner or post-graduate student.

CEREBRAL MENINGITIS. By MARTIN W. BARR, M.D., Resident Physician in the Pennsylvania Training School for Feeble-minded Children, etc. Pp. 93. Detroit: George S. Davis, 1892.

WHILE the crudities of this little brochure might perhaps have been overlooked in a graduation-thesis, they cannot escape criticism, formally presented to the profession as they are. The work gives evidence of the expenditure of a good deal of literary research and is deserving of a much better presentation than it has received. There is little evidence of analysis, though there is considerable citation of authority. When it is stated that the arachnoid "is never the seat of inflammation," the question naturally arises as to the authority for so emphatic a negative statement, while there is nothing to remove the doubt as to its accuracy. By a literal translation Morgagni is made to speak of an "exudation of gelatin." In another place, dropsy of the ventricles is quoted as being "caused by inflammation of the meninges or bloodvessels." It must require a refinement of discernment to recognize *internal cephalalgia*. The following remarkable recommendation is made for the treatment of pachymeningitis: "Bromides and narcotics are very useful, given *ad libitum* when necessary, to quiet the cerebral excitement." Elsewhere it is stated that "the most valuable hint in regard to the treatment of hematoma is this: Decide upon your line of treatment and do not change it, except for good and sufficient reasons. Never give up hope until the patient is absolutely dead." Masturbation is suggested as a possible cause of meningitis. The tautology of *traumatic injury* finds repetition. The adjective *verticalar* is manufactured to indicate the convexity. The synonyms of the various conditions discussed are presented in seven languages. We fear that Dr. Barr has brought forth a premature production the vitality of which is exceedingly doubtful.

## CORRESPONDENCE.

### THE HYGIENE OF MENSTRUATION.

To the Editor of THE MEDICAL NEWS,

SIR: In THE MEDICAL NEWS of April 23d I have noticed a reference to a paper concerning "Some Results of Withdrawal," by Dr. L. Bolton Bangs, of New York. I am glad to see the pernicious practice condemned. I have had under my care several patients, some of them married people, who have received considerable injury from this procedure. One woman's nervous system was very seriously injured by this unnatural practice of her husband. The habit is much more frequent than we would be led to suppose from the scanty literature on the subject. Many married people make a practice of the act if, for any reason, connection takes place during the menstrual period, and others, on all occasions.



A reference to the old biblical laws may be interesting in this connection.

We read in the fifteenth chapter of the third book of Moses, called Leviticus, the following laws concerning the menstrual woman :

"19. And if a woman have an issue, and her issue in her flesh be blood, she shall be put apart seven days : and whosoever toucheth her shall be unclean until the even.

"20. And every thing that she lieth upon in her separation shall be unclean : every thing also that she sitteth upon shall be unclean.

"21. And whosoever toucheth her bed shall wash his clothes, and bathe himself in water, and be unclean until the even.

"22. And whosoever toucheth any thing that she sat upon shall wash his clothes, and bathe himself in water, and be unclean until the even.

"23. And if it be on her bed, or on any thing whereon she sitteth, when he toucheth it, he shall be unclean until the even.

"24. And if any man lie with her at all, and her flowers be upon him, he shall be unclean seven days ; and all the bed whereon he lieth shall be unclean.

"25. And if a woman have an issue of her blood many days out of the time of her separation, or if it run beyond the time of her separation ; all the days of the issue of her uncleanness shall be as the days of her separation : she shall be unclean.

"26. Every bed whereon she lieth all the days of her issue shall be unto her as the bed of her separation : and whatsoever she sitteth upon shall be unclean, as the uncleanness of her separation.

"27. And whosoever toucheth those things shall be unclean, and shall wash his clothes, and bathe himself in water, and be unclean until the even.

"28. But if she be cleansed of her issue, then she shall number to herself seven days, and after that she shall be clean. . . .

"31. Thus shall ye separate the children of Israel from their uncleanness ; that they die not in their uncleanness, when they defile my tabernacle that is among them."

Lieut. Totten and other writers have endeavored to demonstrate that our North American Indians are the remnants of the lost tribes of Israel, and they certainly present powerful arguments to support such a view. Is not the custom prevailing among our Indians of considering the menstruous women "unclean" something more than a mere coincidence? A tradition so powerful and a dread of disobedience so intense, that the isolation of a menstruous woman is never broken by the wildest and most lawless of savages, certainly must attract our serious attention.

Among the Anglo-Saxons I think we may safely assert that a menstruating woman can only with some little difficulty conceal the fact of her "sickness." Certainly medical men must often notice the peculiar bearing and the facial appearance, besides the physical symptoms, of a woman menstruating, and very often even the disgusting odor. While to our notice as medical men it frequently comes about that we are informed of men of all stations in life cohabiting with women during menstruation, I think it can be safely asserted

that among men of ordinary education, refinement, and good taste, and even among the comparatively poor and ignorant, a menstruous woman is let alone until she is "clean." It seems to me that this custom of isolation is returning. Married women leave the conjugal bed and retire for a few days to some "spare room," and after a complete bath and change of linen, and the use of perfumery and other methods of purification, return to married life again. This is certainly as it should be, and is the opinion of many medical men I have no doubt.

In Germany, at least, we find the regulations concerning the care of menstruating girls well worth imitation in this country. There a girl at such times retires and generally goes to bed, and remains in bed for at least from forty-eight to seventy-two hours, if not longer. It is no shame to be a normal woman in Germany, and the function of menstruation is encouraged and protected, not ignored or interfered with, as it is so often in the United States. It is not the purpose of this communication to write upon the subject of menstruation as it applies to the care of our American patients, but quite enough has been stated to cause any thoughtful physician to repeat the warnings he has undoubtedly given his patients, time and again, to insist upon greater maternal watchfulness in the development of our girls, and to encourage that respect for womanhood and motherhood that was once so prominently a type of the honor and manhood of ancient Romans, and that perhaps in a higher sense is the real characteristic of Anglo-Saxons. Certainly from our worthy aborigines, the native red Americans, we can learn lessons on hygiene, as well as in many other departments of life. In encouraging attention to the laws of hygiene we directly improve public morals. Hygiene and immorality are more or less incompatible. Where education is best developed, immorality is least observable. Unsanitary conditions and filth are synonymous terms. The normal, healthy body is very likely to have a high standard of morality governing it. Therefore, the study of hygiene and the dissemination of hygienic knowledge are powerful aids in the missionary work of religion. The physician, then, in the conscientious discharge of his duties, is a valuable factor in the welfare of the community in which he lives. Cleanliness is next to godliness—a truism that medical men interpret more clearly than any others.

Respectfully,

W. THORNTON PARKER, M.D.

BEVERLY, MASS.

#### WHAT CAUSED THE FEVER?

To the Editor of THE MEDICAL NEWS,

SIR: In the early morning of April 1, 1892, I delivered Mrs. T., a primipara. The labor was normal and unusually easy. The pain lasted only about three hours. When I was called, the head of the child was clearly visible; *no examination was therefore necessary.* The placenta came away spontaneously in about twenty minutes. I used the secundines in a demonstration given the nurse, and I am positive that no portion remained in the uterus. There was no laceration, excepting a very minute tear of a small remaining portion of the

hymen. No injections were given, as none seemed indicated. Antiseptic pads were used.

Until the sixth day the patient's progress seemed absolutely perfect. The appetite was good. The bowels moved naturally. There was no fever. The supply of milk was abundant. The pulse was strong and regular. The after-pains were not sufficiently severe to demand attention. Involution progressed remarkably fast, and but for slightly broken sleep, not troublesome enough to alarm me, there was nothing to indicate that my patient would not be up in an unusually short time. At noon of the sixth day fever suddenly appeared, though the feeling of malaise was not sufficiently pronounced to make the young mother, an intelligent woman, think that there was anything wrong. Thinking the rise of temperature (to 105.5°) might possibly be due to decomposing coagula, with a new catheter I washed out the uterus with a 1 to 5000 bichloride solution, using a gallon of water, which returned clear, the discharges having almost ceased. There was no fetor whatever; no tenderness in the iliac region. The fundus of the uterus rose a little above the pubic bone. At 7 o'clock on the same evening the patient had one of the severest chills that I ever saw, after which the fever began to rise so alarmingly that I gave thirty grains of quinine, in two doses, half an hour apart. In the morning the temperature was normal. My satisfaction was short-lived, for at my evening visit I was obliged to record a body-heat of 106.5°. I gave quinine in the same dose as before, again flushed the uterus, with negative results, and on the morning of the ninth day found that my efforts had only succeeded in lowering the temperature to 103.5°. Quinine disagreed with the stomach; the nervous condition was bad; and the outlook seemed generally discouraging.

I was utterly unable to find any cause for my patient's condition, and thinking another case of puerperal fever might have occurred in the room we were occupying, I directed that she be moved into the large airy parlor, of which the air was to be kept very cool and frequently changed. Over her head I placed Magill's head-cooler, and ordered small doses of quinine, to be repeated at such intervals as to act as a steady tonic without disagreeing with the stomach. The fever continued very high, the temperature ranging between 106°, 105.5°, 104°; but the heart was steady, and the ability to retain nourishment (milk) was so good that I was encouraged to use acetanilide as an antipyretic, at first, commencing with three-grain doses, which never failed to depress the temperature at least two degrees, and discontinuing when the temperature fell to a safe limit. After a time, finding that no unpleasant effects followed, and that by the use of the agent my patient's nervous system was quieted, while the heart and stomach were undisturbed, I decided, if possible, to lower the temperature to nearly normal, and endeavor, by means of the acetanilide, to hold it at as nearly that level as seemed advisable. I commenced giving the drug at four-hour intervals, for I found that any effect produced lasted about that time. I continued this dose (three grains) night and day. Improvement was thence uninterrupted. My patient's jaw, which had been set so that I could with difficulty introduce my thumb into her mouth, began to relax. The temperature

did not again rise above 100°; the action of the heart slowed, and the nervous system became more steady. Three days after I commenced the administration of acetanilide I stopped all medication except small doses of sulphonal to produce sleep, and no bad symptoms of any importance have since been noted.

A convert to the teaching that in private practice such cases are almost without exception avoidable, I am not a little chagrined by the fact that I can in no possible way account for the inception of this fever. I can recall no point at which possible antiseptic precautions were omitted. No portion of the secundines was retained; no coagula collected; no fetor or tenderness existed; no exposure had taken place; the breasts remained soft throughout. My nurse was careful and capable, and neither she nor myself had within two years attended a case of puerperal fever. Add to all this the fact that until the seventh day the puerperium was in all possible ways satisfactory, and I am entirely in the dark as to the cause that furnished reason for such alarm. I append a copy of my temperature-chart, hoping that someone wiser than myself will enlighten me.

	9 A.M.	1 P.M.	5 P.M.		
Thursday,	.....	105.5°	.....	Chill, ½ hr. (severe).	In evening 30 gr. quinine.
Friday,	98.5°	106.5	....	.....	" " "
Saturday,	103.5	103.5	105°	.....	Small tonic doses quinine.
Sunday,	106	103	103.5	2 qts. milk in 24 hrs.;	
Monday,	104.5	103.5	.....	bowels moved every	Quinine as tonic; acetanilide (3 gr.) when fever rose above 103°.
Tuesday,	102	102	105	third day.	
Wednesday,	104.5	103.5	104	by enema.	
Thursday,	101.5	104.5	105	Chill, 10 A.M. (mild).	
Friday,	98.5	100	104	.....	Acetanilide (3 gr.) every four hours.
Saturday,	98.5	100	104	.....	
Sunday,	.....	103	105	.....	
Monday,	100.5	98	99.5	.....	
Tuesday,	98	97.5	98	.....	
Wednesday,	98	98	98	.....	
Thursday,	98	98	98	.....	

Respectfully,

KATHARINE BERRY, M.D.

LA CROSSE, WIS.

#### THE STUDY OF ANATOMY FROM THE PHYSIOLOGIC STANDPOINT.

To the Editor of THE MEDICAL NEWS,

SIR: I have often wondered why many medical students think that human anatomy is a dry and uninteresting study. The human body is the most wonderful piece of mechanism in the universe. In it we find a machine that is self-energizing and self-propelling; that feeds itself and at the same time consumes and carries its own fuel; that lubricates itself during its motions, and removes from it, by its own action, the waste matter resulting from its own disintegration.

If a piece of machinery could be made by human hands embracing one tithe of the perfection to be found in the human body, all mankind would hail it as a most wonderful achievement. If such be the case, may not the lack of interest shown by medical students in the study of anatomy be due to errors in our method of teaching this study?

To my mind, the first and most striking error to be found in the usually adopted method of teaching anatomy is the lack of system. Thus, in taking up the study of chemistry, we always begin by investigating the proper

ties of the gases and simple elementary bodies; thence we proceed gradually to build up the more complex compounds. An analogous method is employed in the study of botany, geology, and, in fact, in every branch of natural science, without exception.

Now, why do this in every other branch of science, and then adopt, as we do, such an entirely different method in the study of human anatomy? As a rule, we commence with the study of the adult human body, the most wonderfully complicated and marvellously organized living organism. Our usual method resembles what would be the case if, in the study of chemistry, we should commence with the study of the complex chemic carbon compounds, in place of beginning, as we always do, with the simple elementary bodies, and then gradually building up from them the compounds produced by the union of the diverse molecules.

My idea would be to entirely reverse this method of teaching. In place of beginning with the adult human body, I would begin with the human ovum in its elementary and unimpregnated state. First, I would describe the changes in the ovum occurring immediately after impregnation, then the development of the two primary layers of the ovum (the epiblast and the hypoblast), with the tissues and organs produced by them. After this, I would give the development of the mesoblast, or middle layer of the ovum, and then give the tissues and organs developed from it. In this way we would have a system of human anatomy that would be worthy of taking its place among the exact sciences.

Some great genius will do this some day soon, and we will all wonder why it was not done long ago.

Respectfully,

ROBERT REYBURN, A.M., M.D.

WASHINGTON, D. C.

## NEWS ITEMS.

**Presentation to Sir George Buchanan, F.R.S.**—Sir George Buchanan has lately resigned the post of Medical Officer of the English Local Government Board. A committee has been formed with a view to forwarding a movement for enabling those interested in public health to give expression to the high estimation in which they hold the important work which Sir George Buchanan has done, and for affording some opportunity for the recognition of his conspicuous services in the cause of preventive medicine.

A subscription list has been opened with a view to presenting to Sir George Buchanan some permanent memento of the esteem in which he and his work are held.

Subscriptions (not to exceed two guineas from each contributor) may be sent to the Honorable Secretaries, W. H. Hamer, Ladywell, 69 Dartmouth Park Hill, London, N.W.; J. C. Thresh, The Limes, Chelmsford, Essex, or to Dr. John S. Billings, Army Medical Museum and Library, who has been authorized to collect funds for the purpose in the United States.

**Vivisection.**—At the last annual meeting of the British Medical Association a resolution was proposed by Mr. Joseph Hutchinson and unanimously adopted, "That this general meeting of the British Medical Association

records its opinion that the results of experiments on living animals have been of inestimable service to man and to the lower animals, and that the continuance and extension of such investigations are essential to the progress of knowledge, to the relief of suffering, and the saving of life."

**The American Electro-therapeutic Association** will hold its second annual session at the Academy of Medicine, New York, October 4, 5, and 6, 1892. Dr. W. J. Morton, of New York, is President, and Dr. H. R. Bigelow, of Philadelphia, Secretary.

**A Semmelweis Memorial.**—It is proposed to establish an international memorial in honor of Semmelweis, who in 1847 recognized the infectiousness of puerperal fever and adopted practical measures that led to a decided reduction in the mortality from this source.

**Dr. W. Thornton Parker** will deliver the course of lectures on Medical Jurisprudence in the College of Physicians and Surgeons, Chicago, during the approaching session of 1892-93.

**Women Eligible to Membership in the British Medical Association.**—At the recent meeting of the British Medical Association the rule excluding women from election to membership was revoked.

**Dr. John Deaver**, one of the leading physicians of Lancaster County, died August 22d, at Buck, Pa., sixty-five years old. He was the father of Dr. John B. Deaver, of Philadelphia.

**Dr. Frank P. Norbury** has been elected Professor of Nervous Diseases in Marion Sims College, St. Louis.

**Rudolf Demme**, the well-known pediatricist, died recently at Berne.

## BOOKS AND PAMPHLETS RECEIVED.

**Essentials of Medical Diagnosis.** By Solomon Solis-Cohen, M.D., and Augustus A. Eshner, M.D. Philadelphia: W. B. Saunders, 1892.

**The Ophthalmometer of Javal and Schiötz, and the Diagnosis of Astigmatism.** By J. H. Woodward, M.D. Reprint, 1892.

**Ophthalmia Neonatorum.** By C. Veasey, M.D. Reprint, 1892. Annual Announcement and Catalogue of the Baltimore Medical College. Session 1892-93. Baltimore: King Brothers, 1892.

**Indian Types of Beauty.** By R. W. Shufeldt, M.D. Reprint, 1892.

**Pulmonary Atelectasis as a Cause of Anemia.** By Albert Abrams, M.D. Reprint, 1892.

**Catalogue of the University of Pennsylvania for the Session of 1891-92, Department of Medicine.** Philadelphia: University of Pennsylvania Press, 1892.

**The Pathological Anatomy of Acute Arsenical Poisoning.** By Ludvig Hektoen, M.D. Reprint, 1892.

**Guy's Hospital Reports.** Edited by N. Davies-Colley, M.A., M.C., and W. Hale-White, M.D. Vol. XLVIII, being Vol. XXXIII of the Third Series. London: J. & A. Churchill, 1892.

**The Medical and Dental Register-Directory and Intelligencer of Pennsylvania, New Jersey, Delaware.** George Keil, Editor. Philadelphia: George Keil, 1892.

**Proceedings of the Philadelphia County Medical Society.** Vol. XII, 1891. T. B. Schneideman, M.D., Editor. Philadelphia: Printed for the Society by Wm. J. Dornan, 1892.





# ALL ANIMALS INOCULATED IN EYE WITH VIRULENT CULTURE TUBERCLE BACILLI

FEBRUARY 2, 1892



**ANIMAL A**

Control, 8 weeks after Inoculation.

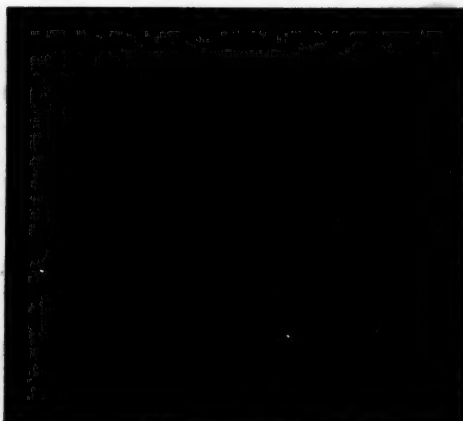
Acute Inflammation of Structures of Eye. Cornea becoming cheesy.



**ANIMAL A**

Control, 14 weeks after Inoculation.

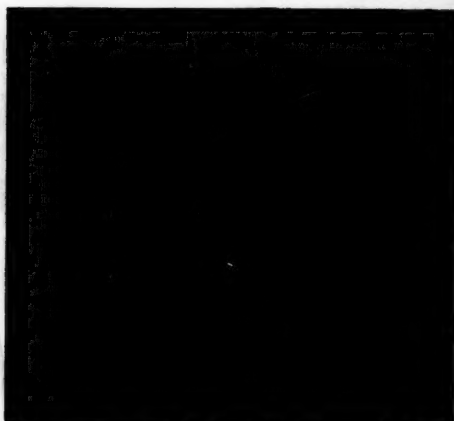
Inflammation has subsided. Eye destroyed. All the Cornea is cheesy.



**ANIMAL B**

8 weeks inoculated. Treated 6 weeks with Alcoholic Solution Bacterio-Protein.

Cornea opaque and becoming cheesy.



**ANIMAL B**

14 weeks inoculated. Treated 12 weeks with Alcoholic Solution Bacterio-Protein.

Disease has progressed but little. No reparative changes have taken place.



**ANIMAL C**

8 weeks Inoculated. Treated 6 weeks with Filtrate of Liquid Cultures.

Irritation caused by treatment has resulted in Shrinking of Eye-ball. Disappearance of Tubercle and Caseous Areas. Cornea still opaque. Eyelids swollen and everted.



**ANIMAL C**

14 weeks Inoculated. Treated 12 weeks with Filtrate of Liquid Cultures.

All Inflammation has subsided. Anterior Chamber obliterated. Iris adherent to clear Cornea. No Tubercle or cheesy spots remain.